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Shop Improvements Vital Necessity

NEARLY one-third of railway operating cost is for maintenance of equipment, and there is no gainsaying the vital importance of improved shop equipment and methods in minimizing this cost. Money spent for modern shop and enginehouse facilities is just as positive a means of increasing railway *net* operating income as it would be if devoted to the purchase of new rolling stock, additional motive power and other things which increase the revenue-earning capacity of a railroad. The statement has been made that railroad managements look upon expenditures for shop improvements as of secondary importance, and it must be confessed that the appearance of some locomotive and car repair shops and engine terminals lends considerable justification to this view. The efficacy of modern maintenance facilities and methods has been demonstrated time and again. Shop output has been increased 50 per cent in numerous cases within a period of two or three years, while employing practically the same force. This means a reduction in payroll cost per locomotive or car of nearly 25 per cent and is often accompanied by a reduction in shopping days up to 30 per cent or perhaps even more. Aside from economies in maintenance work itself this reduction in shopping days has an important effect in promoting more intensive use of equipment and increases operating efficiency from an entirely different angle. Some of the railroads now making the best financial showing are those which in the past have paid the most attention to providing maintenance-of-equipment forces with the tools needed for the efficient carrying on of their work.

Car Loading Statistics

ONE impressive fact that stands out from an examination of the freight car loading statistics is the large and steady increase in the loading of merchandise and miscellaneous freight, which includes a large percentage of manufactured articles. While the total loading for 39 weeks of this year has exceeded an average of a million cars a week (39,251,889) and represents a considerable increase as compared with any previous year, the merchandise and miscellaneous classifications are the only ones in the Car Service Division's statements to show totals which have not been exceeded in one or more previous years. The cumulative figure for grain and grain products for the 39 weeks, 1,775,136 cars, was exceeded in 1924, when the total for the corresponding period was 1,825,658 cars, and also in 1922. The livestock figure, 1,142,466 cars, was exceeded in 1923, 1924 and 1925. The coal loading in 39 weeks this year, 6,957,894 cars, is less than the corresponding figure for 1923, 7,203,477 cars, although it exceeds any other of the last four years. Coke loading this year, 527,203, cars, is less than that of 1923, which was 568,416 cars. Forest products, 2,796,154 cars, shows a falling off as compared with 1925 or 1923, and ore loading, 1,680,180 cars, is less than that for 1923. On the other hand the loading of merchandise and l.c.l., traffic, 10,039,508 cars, compares with 9,824,437 cars in 1925, 9,320,628 cars in 1924, 9,034,125 cars in 1923, and 8,950,807 cars in 1922. Miscellaneous loading for the 39 weeks amounted to 14,333,348 cars, as compared with 13,818,023 in 1925, 12,647,975 in 1924, 12,860,027 in 1923, and 10,825,175 in 1922. All districts except the Allegheny and Northwestern show totals for 1926 exceeding those for the corresponding period of any previous year, but in those two districts the 1923 figures are higher than those for this year.

Calling Things by the Right Name

WOULD it not be in the interests of greater efficiency and better understandings if more care were used in selecting words and expressions related to common problems and practices? Joe Marshall of the American Railway Association, in addressing the Norfolk & Western annual efficiency meeting on claim prevention, emphasized this by directing attention to the fact that "lost packages" are really "lost records" and an effort in this case should be made to concentrate on improving the records. "Defective equipment" in many cases is caused by a faulty selection of equipment for a given commodity. "Robbery" could be more quickly detected and greatly reduced if more attention were given to testing seals. The most successful worker or player is the one who keeps his attention closely fixed on the goal toward which he is striving. Special pains should, therefore, be taken to keep the goal clearly in sight and distinctly defined at all times. Clarity of expression will be found to be exceedingly helpful in this respect.

Freight Claim Payments Decrease

THE freight claims paid by the Class I carriers of the United States and Canada for the first six months of 1926 again show a reduction, the amount this year being $19,195,436, as compared with $20,344,568 for the same period last year, equivalent to a decrease of 5.6 per cent as compared with the first six months of last year and of 65.7 per cent as compared with 1921. The showing this year is particularly favorable in view of the fact that car loadings during the first six months increased 2.9 per cent. The percentage of decrease each year is growing smaller and greater effort is required on the part of all concerned if the roads are to continue to show a decrease. A study of the claim payments for the years 1921 to 1925 shows, however, that there is still room for improvement and that special attention will have to be directed toward claims from carload shipments, claims due to damage and those due to delay.

The payments charged to carload shipments increased from 60.5 per cent of the total claims paid in 1921 to 73.2 per cent in 1925, payments due to damage increased from 48.6 per cent of the total in 1921 to 64.6 per cent in 1925, while those due to delay increased from 10.8 per cent in 1921 to 11.3 per cent in 1925. In contrast, l.c.l. payments decreased from 29.5 per cent of the total in 1921 to 26.8 per cent in 1925, while the proportion of the account charged to loss decreased from 40.6 per cent in 1921 to 24.1 per cent in 1925.

More Accurate Information Necessary

BY far the greatest defect in structural steel is its extreme susceptibility to corrosion. It is not surprising, therefore, that technical societies and associations have devoted much time to studies of this defect and to the investigation of protective coverings. However, judging from two committee reports dealing with this subject which were presented before the convention of the American Railway Bridge and Building Association, reported on another page of this issue, progress has been exceedingly slow. Oil paints of high quality manufactured by reputable concerns afford a high degree of protection to steel subjected to average atmospheric conditions. But it is the structures exposed to corrosive gases, vapors or liquids which present the real problem of protection, and by far the most severe effects are encountered in structures subjected to locomotive gases. This is often intensified by the eroding action of cinder blast, but with suitable shields this feature is not so formidable. The real menace is the chemical action of sulphuric and sulphurous acids formed by the sulphur gases in the smoke in the presence of water vapor. Judging from the reports presented at the Bridge and Building convention, there is still room for marked improvements in the measures now applied for the protection of structural steel from these agencies. One line of approach to this problem is to determine with greater accuracy the reasons for the seeming ineffectiveness of some of the forms of protection now applied, whether they fail because of inherent limitations of the material or because the materials were not used to the best advantage. For example, the reports presented at the Bridge and Building convention show a wide variation in the results obtained with concrete jacketing of steel, yet in view of the well-known variations in the quality of concrete as constructed for various purposes, it is seriously to be questioned whether all of the failures discovered in such concrete protections are the result of inherent limitations of this material. The same point may well be raised with respect to other materials which have been applied as a means of protecting structural steel.

The Milwaukee's Purchase Budget

THE Chicago, Milwaukee & St. Paul has undertaken the budgeting of its purchases, as described in an article published in the *Railway Age* of October 9. This plan is now a year old and is claimed to have been of benefit to the property. The budgeting of railway purchases has been advocated on several occasions in recent years and budgeting plans of one kind or another have cropped out here and there, but this is believed to be the first case where a railroad has openly launched and officially sanctioned such a plan.

It is inevitable that this innovation will meet with skepticism. It is well that it should. It would be a dangerous situation if every departure in railroading should be considered progressive simply because it is a change. Stability of the industry and its strength demand cautiousness in discarding the old for the new, and budgeting of purchases is distinctly new in this field. However, the Milwaukee's experiment will bear close watching and study.

It is particularly of interest that the plan is not what the term "purchase budget" often implies, that is, a scheme intended primarily to fix and restrict what the railroad *can* actually spend in any one month for material, as where only a limited amount of cash or credit is available. It should be emphasized that the plan is not born of the receivership, although it is entirely probable that the financial condition of the Milwaukee has favored its adoption. It is also observed that the aim is not that contemplated by some forms of purchase budgets of arriving at such a determination of future requirements of the road for materials and supplies, as will promote market stabilization or favor speculative buying. Instead the plan is primarily a stock control measure with its fundamental purpose that of impressing users with the money value of material by putting pressure upon the necessity of planning ahead of time for all purchases to be made. In this respect, the plan is unquestionably superior to some methods which are known to have been resorted to by railroads at one time or another for controlling material and supplies, and it may well be the forerunner of a development in the purchases and stores departments which will be recorded in future years as another decisive step in the direction of more efficient operation. It is of some significance, at least, that after having broken the ice this road has not yet been heard to complain about the water.

Location and Mounting of Automatic Highway Crossing Signals

THE automatic highway crossing signal is being recognized more extensively by state commissions as better protection for highway traffic than flagmen on the ground, and in some cases better than gates, especially where the gates are not in service the full 24-hour period. The Signal Section of the American Railway Association has narrowed the number of aspects to two standards, either the wig-wag type or the flashing light type. Information furnished the *Railway Age* by the railroads indicates that over 900 wig-wags and something over 450 flashing light highway crossing signals were installed or under construction in 1925, and perhaps greater progress is being made during the current year. Having accepted either one or the other of these two standard types, the problem of locating the signal arises. Should it be at the right of the highway or in the center of the driveway and at the height to be on a level with the driver's eye or high enough to clear large trucks. The advantages and disadvantages of each location have been discussed at various meetings of the Signal Section, A. R. A., but it seems to be the opinion of the majority that, where the road or street is wide enough, it is better to locate the signal on a large concrete base in the center of the street, providing an ordinance is passed by the local government authorizing this location and releasing the carrier from liability for damages to any vehicle driven into the signal so located. The Roadmasters and Maintenance of Way Association in a recent convention also recommended the center of

street location for the automatic crossing signal. Experience has shown that when any part of the signal mounted at the edge of the highway extends over the path of vehicles that the signal must be mounted so as to clear the pavement at least 14 ft. However, with the center of street location with a foundation large enough to protect the width of the signal, it is desirable to place the signal much lower so as to be nearer the level of the driver's eye. The state of Michigan favors a height of six feet for the flashing light type. The center of street location is evidently gaining favor rapidly.

How to Be Popular Though Prosperous

THE present has been enthusiastically described as "the golden era of railroading." This phraseology is too general and glowing to be applicable to all phases of the present situation. But in one important respect it is acceptable. The railways apparently are acquiring the very difficult art of making themselves popular, though prosperous.

The net operating income earned by class I roads in August was at the annual rate of 5.51 per cent on property investment and in the first eight months of this year at the annual rate of 5.13 per cent. Measured by the standards of many past years of unusual prosperity the latter figure is a comparatively modest one. The roads as a whole earned 5.25 per cent on property investment in 1902; 5.38 in 1903; 5.03 in 1905; 5.8 in 1906; 5.89 in 1907; 5.22 in 1909; 5.53 in 1910; 6.16 in 1916, and 5.26 in 1917. In other words, in nine years of the last quarter of a century they earned a larger percentage of net return than the Class I roads have earned thus far in the present year. The reason why the railways as a whole are not now earning as large a percentage of return as in 1917 and a good many earlier years is that the western roads are doing much worse than then. In the first eight months of this year their rate of return on property investment was only 4.28 per cent. Furthermore, it must be borne in mind that the purchasing power of the dollar is much less than before the war. But the financial results gained thus far in 1926 are such an improvement over those secured in other years since the railways were returned to private operation that they reflect a gratifying increase in prosperity.

If the true significance of the present railway situation is to be appreciated, however, the improving financial results must be considered in relation to other conditions. The most prosperous period in railway history was that from 1902 to 1910. It was, however, a period in which clouds were gathering which soon burst into a storm that almost ruined them. This was also the period of their greatest unpopularity. They were being denounced for the worst accident records they have ever made. They were being universally muckraked for "stock watering." Popular resentment was rising against the wholesale distribution of passes and extensive rebating. Traffic was outgrowing facilities with the result that there were huge car shortages in 1906 and 1907. These conditions and a nation-wide agitation against them resulted in the passage of the Elkins rebating law in 1903, and the Hepburn act in 1906, and an overwhelming flood of state legislation in 1906 and 1907 to reduce passenger and freight rates, to impose penalties for failure promptly to furnish cars to shippers, and so on. When the railways tried to make a general advance in rates in 1910 public sentiment promptly caused the passage of the Mann-Elkins act forbidding any advance without the previous approval of the Interstate Commerce Commission.

The railways then entered a period of extremely restrictive and burdensome regulation which resulted in the net return earned by them declining in 1914 and 1915 to the lowest level since the period following the panic of 1893. A sudden increase of traffic about a year following the commencement of the war in Europe caused a temporary increase in the return earned in 1916 and 1917, but these were years of car shortages and rapidly increasing expenses, and after them government operation came.

This brief recital of the history of the railways during the fifteen years preceding the adoption of government control calls attention to the great difference between certain conditions that existed then and certain conditions that exist now. The accident record has been so much improved that within recent years it has been the best in history. Rebating and alleged or real "stock watering" have been abolished. A record-breaking freight business is being handled without car shortages because the railways have more than enough capacity to meet all demands upon them. Here and there is heard some criticism of them, but the commendation received greatly exceeds the criticism. They are not as prosperous as twenty or even ten years ago, but along with increasing prosperity they are enjoying a popularity, or at least a freedom from unpopularity, which is without a precedent during the last fifty years.

Increasing prosperity is not without its perils. This is especially true in the case of a great industry that is subject to public regulation. The present comparative popularity of the railways might easily and quickly be lost. If it were lost the opportunity to increase or even maintain the present prosperity would be lost with it. Therefore, too much consideration cannot be given to the means by which the improvement in the railway situation has been brought about as a preparation for accomplishing a further improvement in it.

The principal reason why the public is glad to see the railways do better is that they are giving it the best service it ever received. The rendering of this service has been made possible by increased co-operation with the shippers and by the investment of capital and improvements in operating methods which have enabled the roads for three years to have surplus capacity available at all times. If, as actually occurred twenty years ago when the railways were much more prosperous than now, traffic should outgrow capacity, a terrible blow would be dealt to the present comparative popularity of the industry. The improvement in the financial management of the railways has contributed greatly to improving public sentiment toward them, and it could be further improved by effective efforts to secure a wider diffusion of the ownership of their stocks among their employees and patrons.

Fifteen years ago it was just beginning to dawn on executives of railways that it was an essential function of management to keep the public fully informed about their business, to defend it from unfair criticism and to tell all the things the railways were doing that were of public benefit. The public never would have known that it would injure itself more than the railways by unfair and restrictive regulation of them but for the public relations work that has been done during the last fifteen years, and especially during the last five years; and any cessation or curtailment of it would soon have a substantial adverse effect on net earnings.

A few years ago, owing to recent advances in freight rates, declines of commodity prices and general depressions, there was being carried on a powerful agita-

tion for the repeal of the Transportation Act, and for wholesale reductions of rates regardless of the consequences to the railways; this paper then made the statement that the railways could soon make themselves the most popular industry in the United States if they would really try, individually and co-operatively, to make themselves popular. Since then most of them have really tried to do so. Now not only are they more popular than ever before in a half century, but they are popular while constantly gaining in prosperity—something almost, if not quite, unique. There could not be a more striking and illuminating vindication of the policies that have been followed recently than is offered by the present situation.

"Full Crew" and Train Limit Legislation

A RECENT event in Arkansas illustrates that railways must continue constantly and tirelessly to educate their employees and the public regarding railway matters if they are to get fair and intelligent regulation.

This state has a so-called "full crew" law requiring employment of an extra brakeman on freight trains containing 25 or more cars. The railways succeeded in getting the question of its repeal submitted to a referendum vote of the people last week. Repeal was forcibly advocated in newspaper advertisements, publicity material, public addresses, etc. It was opposed by the same methods by the Brotherhood of Railroad Trainmen. The vote had not all been counted when this editorial was written, but reports then indicated clearly that the repeal measure had been defeated. The apparent outcome is not without serious aspects. It is to be feared that the result of the vote in Arkansas may give an impetus to the advocacy and consideration of harmful legislation at the approaching sessions of various state legislatures.

Two different kinds of legislation having the same purpose have been advocated by the railway labor unions. One of these is legislation requiring employment of an extra brakeman on each train containing more than a specified number of cars. The other is legislation absolutely to limit the number of cars that may be hauled in a train.

The arguments made in defense of the full crew law in Arkansas were, in the main, the same as those which began to be generally advanced in favor of such legislation about fifteen years ago, and which formerly proved effective in many states. It was claimed that long trains increase the danger of accidents to railway employees and other persons—at least unless an extra brakeman is employed upon them. It was pointed out in addition that repeal of the law would "vote 900 of our citizens out of jobs," and it was asked, "Why should we discriminate against our own citizens in order to help reduce the necessary expenses of railroad operation?"

In view of developments on the railways within the last fifteen years, and especially within the last ten, it seems remarkable that there are still people who will claim and others who will believe that increase in the length of trains tends to increase accidents. Increase in the length of trains reduces the number of trains if is necessary to operate to handle a given amount of business, and, therefore, the number that might be derailed or that might collide with each other. It also reduces the number of men that must be employed. A reasonable man might consequently conclude, without any of the actual facts regarding accidents being presented to him, that increase in the length of trains would tend to reduce the number of persons killed and injured.

It is not necessary, however, to rely upon such abstract reasoning. The facts regarding the changes that have occurred in the length of trains and in the number of fatal accidents on railways conclusively demonstrate that increase in length of trains does not increase accidents, but has been accompanied by a great reduction of them.

In 1913 the average freight train contained 31 cars; in 1916, 35 cars; in 1924, 41.7 cars; in 1925, 43.8 cars; in the first seven months of 1926, 44.6 cars; and in July, 1926, 46.3 cars,—this last being the largest figure ever reported. What has been the trend of fatal accidents meantime? The statistics published by the Interstate Commerce Commission fully answer this question. The total number of persons killed in 1916 in accidents resulting from the operation of trains was 9,476, and in 1925 only 6,364, a reduction of more than 33 per cent.

It is nominally for the protection of employees, however, and especially of trainmen, that full crew and train limit legislation is advocated. The Commission's statistics of accidents in 1925 are not available in detailed form, but in its accident bulletin for the year 1924 it gave detailed statistics which utterly destroy the "safety" argument for such legislation. These statistics show that during the last ten years, when the average number of cars per freight train has been steadily and rapidly increasing, the number of fatal accidents to all employees has been declining. The total number of fatal accidents to all classes of employees in 1916 resulting from the operation of trains was 2,513. It increased in 1918 to 2,928, but has never equalled this figure since. In 1923 the railways handled a record-breaking freight business but the total number of employees killed was only 1,645. In 1924 the number killed was only 1,246, or less than half as great as in 1916.

The most striking figures of all, however, are those regarding accidents to trainmen. It is claimed that lengthening of trains especially increases the hazards to them. In the accompanying table are given statistics showing for the years from 1913 to 1924 the total miles freight trains were run, the number of freight trainmen killed and the number of freight trainmen killed for each 10 million miles that freight trains were run.

TABLE I—FATAL ACCIDENTS TO FREIGHT TRAINMEN, CLASS I ROADS.

	Total freight train miles (thousands)	Freight trainmen killed	Freight trainmen killed per 10 million train miles
1913	711,125	1,006	14.1
1914	668,590	842	12.6
1915	600,818	489	8.1
1916	693,671	581	9.8
1917	705,167	784	11.1
1918	690,046	885	12.8
1919	614,095	529	8.6
1920	675,788	622	9.2
1921	561,372	317	5.6
1922	587,950	366	6.2
1923	683,481	451	6.6
1924	631,256	313	5.0

Owing to the increase that has been occurring year by year in the average length of trains there has been, in spite of a large increase in freight business, a large decline in the number of freight train miles. Total freight train miles in 1913 exceeded 711 million, while in 1924 the figure was only 631 million. In 1913 the number of freight trainmen killed was 1,006. The highest figure subsequently reached was in 1918, when it was 885. The number of freight trainmen killed in 1924 was only 313, or less than one-third as many as in 1913 and only a little more than one-third as many as in 1918. The number of freight trainmen killed per 10 million train miles in 1913 was 14.1. In 1918, the worst year since 1913, it

was 12.8, while in 1921 it was 5.6; in 1922, 6.2; in 1923, 6.6, and in 1924, only 5.0.

To summarize—from 1913 to 1924 the average number of cars per train actually was increased 35 per cent, while the total number of freight trainmen killed was reduced 70 per cent. No facts could demonstrate more conclusively than these do the utter baselessness of the argument that increases in the length of trains increase the danger of accidents and that therefore for the protection of railway employees and the public the railways should be required to employ extra brakemen on long trains or that the length of trains should be arbitrarily limited. Those who advocate such legislation have only one purpose. This is to compel the railways to employ more men than they need to operate trains, the effect of which, of course, must be unnecessarily to increase the railway operating expenses which the public must pay in the long run in freight and passenger rates.

The folly of such legislation can perhaps be best illustrated by showing the economy in railway operation which resulted from the increases in the average length of trains that occurred between 1913 and 1925. Total freight train miles in 1925, when the average train contained 43.8 cars, were 613 million. If the average train had contained in 1925 only as many cars as in 1913 the number of miles freight trains would have had to be run to handle last year's traffic would have been over 807 million, or 194 million greater than it actually was. Unit cost statistics compiled and published by the Interstate Commerce Commission show that engine house expenses, locomotive repair costs, wages of enginemen and trainmen and fuel costs for the average freight train mile last year were $1.635. Therefore, if the average train had been only as long as in 1913 these direct costs of freight train operation would have been approximately $300,000,000 more than they were; and there would have been additional fixed charges to pay on the investment in the additional locomotives, tracks, etc., that would have been required to make it possible to operate the greater number of trains. The increase in the length of trains is saving the public hundreds of millions of dollars annually in rates, and actually promotes safety in operation. Railway labor unions that advocate legislation to penalize the operation of long trains are acting contrary to the interest of all concerned—railway employees, railways and public.

New Books

Railway Accounting Procedure. Edited by E. R. Woodson, secretary of the Railway Accounting Officers Association. 863 pages. Size 6 in. by 9 in. Bound in flexible fabrikoid. Published by Railway Accounting Officers Association. Distributed by Simmons-Boardman Publishing Company, 30 Church Street, New York. Price $3.00.

The 1927 edition of Railway Accounting Procedure is now being distributed. This valuable book serves the same purpose for the railway accounting department that the manual of standard and recommended practice issued by the A. R. A., division V., mechanical, serves in the mechanical department or the A. R. E. A. manual serves in the engineering department. The mechanical division manual is a loose leaf book kept up to date by the insertion of new pages. The A. R. E. A. manual, which is published every few years, is kept up to date between new editions by the issuance of supplements. The Railway Accounting Officers Association, however, has, since 1922, followed the course of issuing a new "Railway Accounting Procedure" each year and not the least interesting feature in connection therewith is the fact that the book usually comes out not later than October although the association's annual meeting is in June. The reason why the association gets out a complete book each year in distinction from the methods pursued by the mechanical and engineering associations follows presumably from the large numbers of the Procedure distributed and from the great progress that has been made in the subject in recent years.

It is, of course, recognized that railway accounting has its basis in the accounting classifications promulgated by the Interstate Commerce Commission. However detailed the classifications may be they do not explain how the basic figures that finally appear in this account or that account should be gathered and compiled. This is particularly more true of the revenue accounts than of the disbursement accounts but whichever is the case, it is a fact that the railway accounting officers have worked out most elaborate and detailed methods and procedure. Their problem, of course, has been to perfect methods that will produce with due promptitude the necessary accounting records of the business as well as all the elaborate data required not only by the federal and state regulatory authorities but also by the other departments of the railroad. At the same time they have had the problem of originating and perfecting the methods for accounting for revenue as between roads on traffic moving over more than one line.

It may not be generally appreciated that the necessities of economical accounting practices with respect to the last have resulted in the extension of interline waybilling among the member carriers of the Railway Accounting Officers Association to the extent that, of the gross freight revenue amounting to approximately 4½ billion dollars accrued by such carriers for 1925, over one-half was included in audit office interline freight settlements among carriers.

Probably, however, the most important problem of the accounting officers has been to perform the accounting functions with proper regard for economy and efficiency. So much has now been done in perfecting methods of procedure and so adequately have these methods been described in R. A. O. A. committee reports that to detail these methods now requires, with due regard to the necessities of brevity, a book exceeding 800 pages in size. Each year the editor is given the problem of inserting new material without adding an undue number of pages. This year in spite of the amount of action taken by the association at its Quebec meeting in June, the editor by skilful condensation has prevented the number of pages in the book from increasing. On the other hand by using thinner paper approximately the same number of pages has been made to occupy a smaller bulk than was required for last year's book.

Another important point about the book is that there is no other book like it. Thus, in spite of the evolution of interline freight accounting forms and practice previously mentioned, very little of a technical character was written about it prior to the adoption by the Railway Accounting Officers Association of mandatory freight accounting rules and standard forms for stating these accounts and their presentation with related data within the covers of the Procedure. But, of course, accounting is not of the accounting department alone. The figures may be compiled by the accounting department but they are used by the mechanical, operating, engineering or stores department. A large proportion of the Procedure is devoted to the special problems of the accounting for these departments and one observes sections on accounting for car repairs, an elaborate section on fuel accounting, treatment of stores accounting problems, a descrip-

tion of methods of payroll accounting, etc. The traffic department will naturally be particularly interested in the elaborate sections on revenue accounting, for any traffic department officer will readily appreciate that one of his duties is always to protect the revenues of his own road; no doubt, his problem would often be simplified if he had a clearer understanding of what the accounting department is doing with that end in view.

As concerns the operating department, one notices several notable features appearing for the first time that will prove of particular interest. Thus, there is an introduction written by W. J. Cunningham, professor of transportation in the Harvard Graduate Schools of Business Administration. There is also an article entitled "Development of Railway Statistics" by Dr. Julius H. Parmelee, director of the Bureau of Railway Economics. It is quite fitting that these two experts in railway statistics should have been called upon for this material because the new Procedure contains much of value to the student of railway statistics. The statistics section, for instance, contains several pages of statistical terms, units and phrases with suggestions as to the proper use of the various units which information, in spite of its great importance and increasing interest, has not hitherto appeared in book form. The bibliography of accounting articles which appeared for the first time in last year's edition of Procedure has been brought up to date by inclusion of the articles which have appeared since. However, this year an entirely new bibliography has been added on railroad statistics which should prove of greatest value. It is of interest that the first reference is dated 1838.

New material has been added on the subject of accounting for car repairs. The plan outlined for handling vouchers covering joint facility arrangements, miscellaneous expenses, material purchases, etc., will be of general interest. General interest will also undoubtedly be displayed in the standard plan for making payments of loss and damage claims, as well as overcharge claims, various standard forms being devised for this purpose.

It is interesting to observe that all of the standard forms devised during the year or revised recently wherever they are such as to pass through the banks, have been such as to conform to the standard of the American Bankers Association or the Department of Commerce, as well as the Railway Accounting Officers Association.

The book contains 863 pages and is bound this year in a rather striking flexible fabrikoid cover in three colors. The marvel might be as to how the association succeeds in selling such an elaborate and well prepared volume for only three dollars but this results no doubt because of the large editions printed. However, whatever the reason may be the point is important. The fact of the matter is that the Procedure is absolutely essential to any one in the accounting department who has any responsibility at all. As each succeeding edition is published it is found to be of greater value to those in other departments as well.

THE STANDARD TIME ZONE investigation has been reopened by the Interstate Commerce Commission for further hearing on the question of whether the commission's orders defining the boundary line between the Eastern and Central zones should be so modified as to include Middletown and Cincinnati, Ohio, and any other portions of Ohio and Kentucky, in the Eastern zone, as urged in a petition filed by the Cincinnati Chamber of Commerce. The proceeding has been assigned for hearing at Cincinnati on October 20 before Commissioner Aitchison and Attorney-Examiner Money.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Economics of Transportation, by W. T. Jackman. Prof. Jackman discusses the basic economic principles of transportation with particular reference to Canadian conditions. 818 p. Pub. by A. W. Shaw Co., Chicago, Ill. $6.00.

Railroad Income, by George M. Shriver. His address at Quebec Convention of Railway Accounting Officers' Association. 14 p. Pub. by Railway Accounting Officers' Association, Washington, D. C. Apply.

Railway Accounting Procedure, 1927 Edition, edited by E. R. Woodson. Includes introduction by Prof. Cunningham of Harvard, and foreword by Dr. J. H. Parmelee of the Bureau of Railway Economics, together with continuation of bibliography. Pub. by Railway Accounting Officers' Association, Washington, D. C., and available from Simmons-Boardman Pub. Co., New York City, $3.00.

Safety-Accident Prevention on a Railroad. Review of what becomes evident in the course of an accident prevention study for a large railroad. 16 p. Pub. by Policyholders' Service Bureau, Metropolitan Life Insurance Co., New York City. Apply.

Periodical Articles

Air Transportation—Its Achievements and Prospects, by Warren Beecher. Magazine of Wall Street, October 9, 1926, p. 1132-1133.

The Eight-Hour Day. Discussion by General Section of International Railway Congress at London, preceded by summary of the reports from various countries, p. 798-813, and participated in by railwaymen from all over the world. Bulletin of the International Railway Congress Association, English edition, Sept.-Oct., 1926, p. 795-840.

Mutual Basis for Rail Labor Peace, by Elisha Lee. The Railway Labor Act. Savings Bank Journal, October, 1926, p. 35-40.

The Silent Revolution in Railroading. II—Shippers' Advisory Boards and Carriers Substitute Team Work for Tumult in Breaking the "Grape Jam," by F. S. Tisdale. Some of the details involved in moving California's grape crop to eastern markets. Nation's Business, October, 1926, p. 33-35.

Statistics. Discussion by General Section of International Railway Congress at London, following summary of reports from various countries. An appendix to this discussion presents the statistics published annually by the Italian State Railways, in addition to those contained in annual report and monthly bulletins. Bulletin of the International Railway Congress Association, English edition, Sept.-Oct., 1926, p. 841-853.

Economics of Transportation, by W. T. Jackman. 818 p. Pub. by A. W. Shaw Co., Chicago, 1926. $6. (The book deals with the "basic economic principles of transportation with particular reference to Canadian conditions.")

The Problem of Steam-Boiler Corrosion, by Frank N. Speller. Includes discussion of influence of scale, organic matter, and composition of materials of construction and preventive measures. Mechanical Engineering, October, 1926, p. 1017-1023.

THE ALLEGHENY REGIONAL SHIPPERS' ADVISORY BOARD, which is being established at Pittsburgh, Pa., by the Car Service Division of the American Railway Association, is to complete its organization at a meeting at Schenley Hotel, Pittsburgh, on November 3. C. F. Wolcott, 709 Oliver Building, Pitsburgh, is district manager of the car service division. The organization committee has selected for the position of chairman of the Board, D. O. Moore, secretary of the traffic division of the Pittsburgh Chamber of Commerce, and for vice-chairman, J. M. Belleville, traffic manager of the Pittsburgh Plate Glass Company.

Railway Fire Protection Association Meets at New Orleans

Rules and regulations given for elimination of fire hazards encountered in bus operation

THE Railway Fire Protection Association held its 13th annual meeting at the St. Charles Hotel, New Orleans, La., on October 12, 13 and 14, with president C. C. Michie, assistant secretary of the Chesapeake & Ohio, presiding over an attendance of about 200. Besides the address of the president, L. G. Bentley, general safety agent of the Chesapeake & Ohio, addressed the meeting on Spending Money to Make Men, Charles N. Rambo, manager of the Railroad Insurance Association, spoke on How a Railroad Can Make Use of the Services of Its Fire Underwriters, and Robert Scott, director, department of insurance and safety, Atlantic Coast Line, made an address on The Human Element in Fire Prevention. Among the committee reports, that of the Committee on Motor Transportation made recommendations on hazards relative to housing, servicing and making repairs on automotive vehicles, the recommendations probably being the first made by any association affecting motor buses.

Motor Vehicle Hazards

The committee reported that it had sent questionnaires to 85 member roads and that 65 had replied. From these questionnaires it was found that 28 roads are operating 186 rail motor cars, with the largest number on any one road being 24; and 8 roads are operating 244 highway motor coaches, the largest number operated by one road being 141. The committee found in its investigation that gasoline vapor causes many fires and may be responsible for spreading almost every fire that occurs in this type of vehicle and should be treated as the most serious hazard. Fuel tanks should be constructed substantially and located accessibly to permit frequent inspection. They should be so located as to prevent possible injury from collision or overturning. Fuel-filling openings should be accessibly located where not subject to mechanical injury and should be protected with some approved device that will prevent flames from entering the tank or the possibility of the gasoline vapor becoming ignited when the cap is off.

The committee felt that the vacuum system is the only type that it cares to recommend as a standard fuel feed system. The exhaust from the engine should be protected by a properly designed muffler and so located as to insure against injury while at the same time it should allow the proper dissipation of possible unburned gasoline vapor away from the car. It was found that in all the highway motor coaches and many of the earlier rail motor cars, a by-pass from the exhaust line has been used to heat the interior of the car. This line is usually extended under a metal grill along the floor and the inner section of the side wall. Several fires have been reported as having been caused by a pyroxylin umbrella tip, paper, etc., coming in contact with the hot pipe.

The committee recommended that all wiring and electrical equipment should conform to the National Electrical Code and the National Electric Safety Code and at the same time to the regulations of the National Board of Fire Underwriters relative to electric cars insofar as they apply. Wires should be code rubber covered and

run in such a manner that they will not be exposed to mechanical injury, especially vibration or to the absorption of oil or damage by heat. Emergency electric lighting equipment should be provided with advantageously located receptacles into which portable lamps on leader cords can be plugged.

In considering rail motor cars, the committee recommended that fuel tanks should be located below the floor and, on cars where coal or other open flame heaters are installed, should be located as far as possible from the heaters. Filling openings should not be located near the outside doors leading to baggage compartments and doors should be kept closed during the filling operations. The filling of fuel tanks should be performed only at approved filling stations. The motor should be shut down during the process of receiving the fuel supply. The rules governing electric wiring in motor buses were recommended for rail motor cars.

Exhaust line heaters for rail motor cars were found to be unsatisfactory as they are only effective when the engine is running and are unsafe from a fire protection standpoint, as it is practically impossible to provide sufficient clearance from inflammables and to keep such material from coming in contact with the hot pipe. As recent developments in heaters are still in the nucleus no particular type of heater was recommended. Until such time as some satisfactory heating system is developed the committee suggested that where exhaust lines are used for heat all crews should be instructed as to their proper use and that due care should be exercised in proper installation and maintenance. Fine mesh wire screen installed under the protective metal grill will be helpful in preventing paper, etc., from collecting about the pipe. Hot water and hot air heaters of the open flame type should preferably be located in a compartment remote from the engine and as far as possible from the fuel tank.

The construction plans for all future cars should be submitted to the insurance department for approval and advice on fire prevention features, which will do much to prevent fire and the repetition of mistakes made in the past. The committee strongly urged the elimination of combustible material for use in the construction of these vehicles, especially in engine rooms and heater compartments.

The questionnaire of the committee brought out that 26 of the roads operating motor vehicles are using one and two-quart carbon-tetrachloride extinguishers. Two have adopted the two-gallon pressure type as standard, three are using foam type, seven are using 2½-gal. soda and acid and three are using pump tanks in addition. One road reported that its cars are equipped with 160-gal. water tanks. The committee felt that it would not be possible for them to suggest standard fire fighting equipment on account of the great difference in temperatures and weather conditions of different parts of the country through which the member roads operate. The committee felt that at least one pressure type one-gallon carbon-tetrachloride or one 2½-gal. foam type extinguisher should be installed in every engine compartment for use in connection with oil fires, and either a foam, soda and acid or pump type extinguisher in either the baggage or passenger compartment. Other recommendations covered garages and repair shops, including their construction, ventilating, heating and lighting systems, electric wiring, battery charging plants, operation and maintenance, storage and handling of gasoline and oil and fire-fighting facilities.

President Michie praised the work of the members of the association during the past year and the achievements of the association since 1913. In the latter year the organization contained representatives of 33 railroads and their subsidiaries while at the present time there are representatives of 95 per cent of all Class I roads and their subsidiaries in the United States and Canada, in addition to a number of representatives from correlated lines of business. He approved sectional meetings which have been inaugurated during the past year, as such meetings provide a means of discussing the various problems of inspectors and field engineers and help to bring forward new subjects to be treated at the annual convention.

In discussing fire losses sustained each year in the United States, he said:

"In 1875, the first year during which data became available, the aggregate property loss by fire from all causes was $78,102,285. This included property of every description. In 1925 this figure had leaped to the tremendous sum of $570,255,921. During the past five years 15,000 people have lost their lives each year as a result of fire.

"The aggregate property loss, due to fire during this period, also climbed steadily, the figures being: 1921, $495,406,012; 1922, $506,541,001; 1923, $535,372,782; 1924, $549,062,124; and 1925, $570,255,921. The figures covering fire losses sustained by the railroads reporting to the Railway Fire Protection Association during the past five years are: 1921, $7,589,611; 1922, $10,183,459; 1923, $9,001,122; 1924, $10,049,936; and 1925, $7,397,433.

"With the co-operation which we are receiving at the hands of the managements of the roads today, there is no reason why we should not greatly reduce our railroad fire losses. More interest is being displayed by the managements of the various railroads in fire prevention today than ever before. The roads are gradually getting rid of old wooden structures and accepting the recommendations of their fire prevention inspectors in an effort to improve conditions on their properties.

"If we all go back home, imbued with such enthusiasm as must result from this splendid gathering of crusaders against fire and with renewed faith in the importance of our cause, and direct a special campaign for the purpose of convincing the officers and employees of our respective roads that carelessness is the cause of the great majority of fires, it is my conviction that tremendous strides toward fire elimination will be achieved. Point out to officers and employees, in this campaign, how to recognize conditions that constitute fire hazards. Urge them to report these hazards. Talk fire prevention in a convincing manner, and pursue it aggressively. Appeal to employees individually to exercise caution. Point out to them that by individual care and judgment a great saving in human lives, property and money may be achieved.

"Due to the fact that the American Railway Association has no fire protection and prevention section, I feel that it would be appropriate for this association to become identified with the American Railway Association and function as a section of the association. This statement is based upon the fact that the Railway Fire Protection Association was organized about 13 years ago for the principal purpose of helping the railroads in connection with their fire protection and prevention problems. We have accomplished much in this direction, but, with our limited finances, I do not think we can do all that will be expected of us in the future, unless we can be financed by the railroads who have benefited by our efforts and, further, I do not believe this can be accomplished unless we find it practicable to associate ourselves with the American Railway Association."

Robert Scott Sets Goal for Association

Robert Scott, in addressing the meeting on The Human Element in Fire Prevention, outlined several causes of fires and suggested means of prevention. After showing how fire losses can be reduced, he offered a resolution to the effect that the association endeavor to cut fire losses on the railroads of America by 25 per cent by the end of 1930. An abstract of his address follows:

"If we fire preventionists can by word of mouth, or through the printed page, reach the vast army of railroad employees in such a way as to persuade them to take the same care of our railroad property as they do their own, our battle will be won. Nearly every fire that occurs is the result of carelessness or oversight on the part of someone, thus indicating the importance of cultivating the human element if fires are to be prevented.

"Enthusiasm must get beyond the point of ordinary interest. It is easy enough to gain the passing interest of our best men,

but what seems to me as really essential is the creation of ardent enthusiasm on the part of our rank and file on the firing line to lend their efforts to put a stop to fires by preventing them, and it is a fact that many of these fires spring from acts of omission and commission of the men themselves.

"How is this to be done? First, I would say there must be the right sort of morale in our organizations. We must meet with our men on the high plane as co-operators and friends. Next, I would advocate a policy of enlightenment among our men through a system of well-prepared bulletins, illustrating the causes and consequences of fires and how to avoid them, and at the same time endeavor to impress upon them that all conflagrations are small in the beginning. I would encourage conferences, meetings and rallies in the interest of preventing destruction of our valuable properties by the fire demon. Fire brigades can be used as a nucleus for larger organizations and fire chiefs will readily lend themselves to the promotion of almost any kind of an enterprise that has for its object the elimination of waste from this source.

"Employee magazines can be utilized largely in creating the fire fighting spirit as they have a wide circulation and reach nearly all employees. Prizes and other methods of recognition of meritorious service all tend to stimulate the right sort of activity in the interest of fire prevention.

"Let's seek to develop enthusiasm far beyond the degree now existing; use every bit of personality we possess in an effort to inspire others to assist in doing the things we are striving to accomplish; exercise all the influence at our command to bring all possible pressure to bear upon those who are careless and make careful men out of them. Let's make use of the power of suggestion to the limit in reaching such fellows in the hope of making fire preventionists out of them, instead of permitting them to remain breeders of fires through such careless habits as smoking in the wrong place at the wrong time; having improper regard for greasy waste and the dangerous open torch. In other words, arouse in them the desire to conserve instead of to destroy.

"For instance, why not send by U. S. mail to the home of every man employed in some shop plant a suitable letter a day or two after a serious fire has occurred in the plant, calling attention to the case with which the catastrophe might have been averted by just a little precaution on the part of the guilty one? You ask what is the use of such tactics after the fire? The answer is that other fires are liable to originate from the same cause, and the lesson has been carried home!

"The human element in fire prevention can be utilized by creating a spirit of competition either in shops or on divisions. This is a world of competition, we have it on every hand and in connection with all pleasure and business. In everything, we are out for 'the record,' and that simply means that we want to be the best, a laudable desire and one that won't 'down.'"

Charles N. Rambo Offers Services of Fire Underwriters

Charles N. Rambo spoke on How a Railroad Can Make Use of the Services of Its Fire Underwriters. His address in part follows:

"Insurance was organized to make good, to some extent, the waste of the nation due to fire. The insurance companies, through the National Board of Fire Underwriters, awakened the nation to the principles of preservation against loss by fire and the methods and processes of reducing the fire waste. It is unfortunate that so much popular ignorance exists concerning insurance and the part it plays in the economic life of the nation.

"Years ago, insurance was just indemnity, banking was just deposits. They had not reached the broad service rendered the public today. Fire insurance was a pioneer in recognizing its inherent possibilities as a public service institution by the organization of the National Board of Fire Underwriters. While the primary purpose of the formation of the National Board may have been to bring about economies and more uniform practices in fire underwriting, a very great activity has always been service to the public. Consider for a moment the extent and character of the work which is being done to bring about improved building conditions, better water supply systems and more efficient fire departments; and the continuous efforts to acquaint the public with the cause of the enormous fire loss, and to inspire them with the exercise of greater care and forethought to correct it.

"While theoretically a fire insurance company is expected to insure a risk as it is found, underwriters annually expend large sums in public service in the direction of improving conditions and in reducing the fire losses of the country. The educational work on fire prevention and fire protection, such as is carried on by the National Board of Fire Underwriters, is most advantageous to every individual and to the nation as a whole.

"As an illustration of the service of underwriters to the railroads, let me state that as a result of the field work of the railroad underwriting organization with which I am affiliated, we prepared 1,870 reports in 1925. Analyzing the recommendations made to the railroads in these reports, we find that they include 2,666 recommendations on housekeeping and maintenance (46 per cent); 1,530 on safeguarding of fire hazards (26 per cent); 299 on changes in construction (6 per cent); and 1,273 on additional fire protection (22 per cent), or a total of 5,768.

"A re-analysis or a re-survey check on the recommendations and suggestions made in our 1924 reports indicates that 2,739 suggestions had been complied with, or 54 per cent of the total number made in that year. This, I believe, shows real practical results and something which the railroads surely profited by. Without the co-operation and service of the underwriters the details might have been neglected or overlooked and offered many opportunities for losses which would have materially increased the total loss.

"Have you noted that your organization reported 7,975 railroad fires in 1920; 7,963 in 1921; 9,216 in 1922; 8,395 in 1923; 8,609 in 1924; and 7,866 in 1925? Are your architects, engineers and fire prevention inspectors utilizing the products that have developed as a result of years of scientific research on the part of the underwriters and such as I have submitted? Are they keeping informed when new properties are built and protection required therefor and hazards introduced or involved, as to the best and present-day developments which may guard and protect facilities of large value and importance against loss by fire? The material is at hand and can be utilized, and, with it, the service of the fire underwriters in a consulting and co-operative capacity. The work of prevention should go on."

Spending Money to Make Men

L. G. Bentley in discussing the human factor in fire prevention showed how railroads are spending money for the education and physical betterment of employees. He said in part:

"There are two great interests today in industry which are paramount, and which may and should be merged more closely. These are the interests of employer and employee. In our case, the employer has just one commodity to sell, and we have just one customer. Likewise, we have just one agency of production. The commodity is service, the public is our customer, and the employees are our producers. If that service is prompt, safe, cheerful, courteous and efficient, our business will increase. The reverse will be the case if our service is poor and unnecessarily expensive.

"I am sure that you have found in fire prevention, as I have in accident prevention, that success depends upon the esprit de corps of your personnel. Your buildings and premises may be established in a highly satisfactory manner from a standpoint of fire risk, and your fire protection apparatus may be of the most modern type, but unless your personnel is always alert to keep them so and to eliminate the risks which come about through the acts of men, you will continue to have fires. On the other hand, even though your conditions may not reach your highest ideal, if your personnel is right, if your officers and men are wedded to the success of their company, if they have pride in that co-operative success which it is possible to inspire, destruction by fire will be minimized by the careful acts and protective measures of your personnel.

"This desirable state of mind and heart cannot be brought about by means of physical inspection of property and direct supervision over men. I don't believe your fires originate under circumstances where close and constant supervision can be had. I am sure they do occur most often because of a lack of desire of men to put forth that effort necessary to prevention.

"This desire must be in the hearts of men, and it will not be put there by discipline or harsh measures, but because men are happy, contented and in good health, and because they like their jobs and really want to protect the interests of their employers. In the building of men up to this highly desirable state of mind and body, I am convinced our policy must not be a mercenary one. Our desire must be first to make better men because of the good thereby accruing to mankind and because the world needs the best men that can be developed."

To show the aspect of railroads toward this policy, he described employees' associations and other activities which are supported by the Chesapeake and Ohio. The Hospital Association affords care to men who would not otherwise receive it, or, if they did receive it, their entire savings would be consumed or obligations assumed which it would take years to meet. Because of the value of this association in building up men the

hospital buildings and grounds are contributed and kept in repair by the company. The railroad also has recognized the value of the Young Men's Christian Association as a foundation upon which it can rely in the building of men, and as a result, to a great extent the buildings and grounds are contributed and maintained by the company. In addition large contributions in money are made each year. The health and recreation department of the Chesapeake & Ohio is attempting to assist the employees in securing health and recreation. To bring about this end, the railroad is contributing the services of full time experts, as well as baseball parks and other material paraphernalia. Young men's conferences have been developed to prepare apprentices, call boys, young clerks and other boys through educational methods to increase their efficiency and thereby place them in line for better positions. The Veteran Employees' Association is sponsored as a means of affording an opportunity for the members to get together, renew past friendships and form new ones and to talk over recollections of the past that are dear to them. The railway bears the expense of these meetings.

Pennsylvania Bus Charters Disapproved by Governor

GOVERNOR GIFFORD PINCHOT of Pennsylvania, on October 8, announced that he disapproved the applications (which had been approved by the Public Service Commission) from the Pennsylvania and the Reading Company for authority to operate bus and truck lines on the highways of the state; declaring that such a "blanket monopoly" would be inimical to the rights of the people because the Public Service Commission is not to be trusted to protect these rights. The governor's statement is as follows:

"After long and painstaking consideration I decline to approve the charter applications of the Philadelphia & Reading and the Pennsylvania Railroads to operate bus and truck lines for passengers, merchandise and freight over the highways of the State, as recommended by the Public Service Commission.

"I do so for the reason that these applications are the first steps toward securing such a monopoly of bus transporation over the highways of this Commonwealth as the Philadelphia Rapid Transit Company has already secured in Philadelphia. I refuse to be implicated in fastening any such monopoly on the people of Pennsylvania.

"These charters do not on their face disclose their actual intention. They appear merely to grant the right to run buses and trucks over the highways in 55 counties to the Pennsylvania Railroad, and in 24 counties to the Reading, and stipulate that lines of buses and trucks cannot be run over any definite route or routes until after the Public Service Commission has granted the right to operate in each individual case. In fact, they are the opening wedge in handing the highways of Pennsylvania over to the railroads.

"Such blanket grants as these have never been made before. They can have but one purpose.

"It is no answer to say that other bus and truck lines might be permitted to operate. The history of similar cases demonstrates beyond question that competing lines would be crushed out or brought out, that the railroads would absorb them as they did canals, and that the formation of a railroad bus and truck line monopoly would scarcely even be retarded.

"If the present majority of the Public Service Commission could be trusted to protect the rights of the citizens of Pennsylvania against encroachment or extortion * * * the apparent safeguarding of public rights in those charters might have some meaning. Under the actual circumstances it has none.

"The present majority in the Public Service Commission, because of the recent reinstatement by court action of two of its members whom I removed as unfit, is completely dominated by the public utilities. If I were to sign those charters, the commission could complete the railroad monopoly by granting certificates of public convenience without anybody being able to stop it.

"For this reason alone, even if these charter applications did not involve a fundamental public policy, which they do, they ought not to be approved.

"I am aware that these proposed charters have been attacked in the courts. That, however, does not relieve me of the duty of acting upon them.

"The Commonwealth of Pennsylvania has the finest State highway system in America built at a cost to its citizens of more than $400,000,000. The natural result of the granting of those charters would be to hand over our State highways, for which the people paid, to the railroads, who paid nothing for them * * * .

"I would refuse to be a party to granting to the railroads a monopoly of bus and truck transportation over the State highways even if they offered to pay what that monopoly is worth * * * .

"It is worth recalling that the P. R. T. in Philadelphia has been given the exclusive right to operate bus lines over the streets of that city, and pays nothing for the privilege. Yet that same company is paying the Delaware River Bridge Joint Commission, of which I have the honor to be chairman, an annual rental of $100,000 for a nonexclusive franchise to operate buses over the Delaware River Bridge.

"The time to stop the intended control of our highways by the railroads is before it starts. These charter applications will be followed by similar applications from other railroads * * *."

The K. C. S., the M-K-T and St. L. S. W. Merger Hearing

TESTIMONY relative to the effect of the proposed merger of the Kansas City Southern, the Missouri-Kansas-Texas and the St. Louis Southwestern on short line railroads was presented at the hearing on the application for authority for the acquisition and control of the Missouri-Kansas-Texas by the Kansas City Southern and the St. Louis Southwestern by the Missouri-Kansas-Texas before the Interstate Commerce Commission at Dallas, Texas, on September 28 to October 9.

W. M. Whitenton, vice-president of the Missouri-Kansas-Texas, described the savings that would result through the consolidation, discussing cross tie purchases, the joint use of freight terminals, ballast purchases, reclamation plants and fuel purchases. He stated that $180,000 would be saved annually through the joint use of freight terminals since it is planned to bring the St. Louis Southwestern freight into the Missouri-Kansas-Texas yards at Fort Worth, Texas, and to use the St. Louis Southwestern yards for industrial and other yard purposes. The savings in cross tie purchases would be advantageous to the Katy as the merger will permit it to buy along the lines of the associate railroads, thereby lessening freight charges now paid to other roads. The

Missouri-Kansas-Texas would benefit in the purchase of ballast since the supply on the Katy lines is near the point of exhaustion. The joint use of reclamation plants would effect considerable savings because of the increased capacity resulting.

George E. Scott, purchasing agent of the Missouri-Kansas-Texas, testified that if the unification were permitted purchases would be made for the three roads by one purchasing agent with resultant economies because of the lower investment. The Katy would benefit immediately because of lower carrying and other charges to the amount of $37,000 a year. The Katy's investment in supplies as of August 1, 1926, was $6,987,491. This could be reduced $330,000 almost at once with a later reduction of a possible $134,000. An aggregate reduction in the investment of $468,000 and $28,000 in carrying costs would be effected. Greater purchasing power would bring an additional saving of $50,000 yearly. The greater volume of purchase of unit items would lower the cost per item with the combined purchasing power of the three roads. The total purchasing power of the three at present is $25,300,000, he said, and the ultimate saving would be $200,000 a year.

Daniel Upthegrove, president of the St. Louis Southwestern, said he believed the public should pay higher rates on short lines if it were necessary to keep them in operation. Mr. Upthegrove was questioned at considerable length as to the effect a merger would have on the Kennett-Pickett territory in Missouri, located on the Cotton Belt. If the St. Louis, Kennett & Southeastern, a short line, were abandoned, the two towns would become only local points on the St. Louis-San Francisco, and that section of the country which is capable of considerable agricultural development would be affected adversely by the abandonment of any short lines serving it.

Expected advantages to east Texas from the combination were detailed by A. L. Read, traffic expert for the East Texas Chamber of Commerce, who said such a system would tend to aid Beaumont, Texas, in building its port business. He referred specifically to Arkansas cotton which he said now goes east by rail because of advantageous rates. Much of this crop could be brought down to Beaumont and sent to the New England states by water, if the merger is effected.

Benjamin B. Cain, vice-president and general counsel of the American Short Line Railroad Association, testified for member lines which had declared their attitude towards consolidation. The position of these roads is that the public need is for an effective national system of transportation. Roads which cannot be abandoned and must remain to serve their territories should be taken into the stronger systems. Mr. Cain introduced a list of 58 short lines which connect with or might be affected by the merger of the three lines. The total mileage of these short lines was 4,325 miles. He said that a higher rate on short line traffic to increase its revenue would not save the line, but destroy it, by driving business to larger roads with lower rates. Capital will not aid the short line because the national policy as expressed in the Transportation Act, provides for the formation of larger systems and without capital the small road cannot develop its potentialities. The taking over of short lines by trunk lines should be made with conditions which would insure a fair return. The purchase should be considered from the standpoint of public interest and if the road is needed as a unit in the transportation system, it should be taken over at the rate-making valuation fixed by the Interstate Commerce Commission, disregarding its earning power.

The Southern Pacific entered the hearing through its chief traffic officer, Lewis J. Spence, to request that certain conditions be imposed on the Cotton Belt in the event that the Interstate Commerce Commission grants the applications for consolidation. Mr. Spence asked that through routes, rates and services maintained by the Southern Pacific in connection with the Cotton Belt from Texas to St. Louis for 13 years, should be maintained in the public interest and that of the two roads. This was requested in view of the fact that the Katy, acquiring control of the Cotton Belt, naturally would endeavor to get interchange traffic now given to the Southern Pacific.

Many representatives testified on behalf of short lines. These included A. F. Harn, auditor of the Texas Short Line, who testified as to the traffic handled by his road; J. M. Bryson of the Texas Short Line, C. W. Ashworth, secretary of the Canton, Texas, Chamber of Commrce; N. N. Crawford, who testified for the citizens of Grand Saline; W. B. Lasswell, president of the Kennett & Southeastern; R. W. Wortham, receiver for the Paris & Mount Pleasant, and W. D. Stephenson, chief operating officer of the Missouri & North Arkansas.

The opening of a new outlet for cotton by the Beaumont-Port Arthur waterway was advocated as necessary to the successful handling of the crop in the testimony of P. T. Hubbell, vice-president of the Waco, Beaumont, Trinity & Sabine. At present, he said, there exists but one properly equipped port for handling the cotton of Texas and neighboring states. Some of the cotton handled through this clearing point is passed through Beaumont but a day or two previous and has travelled many unnecessary miles to a waterway. He referred to the shortness of the cotton marketing season as necessitating additional means for expediting the movement of the crop. He said that the inclusion of the Waco, Beaumont, Trinity & Sabine in the proposed merger and the building of extensions suggested in the road's intervention, would provide a direct route from Waco to the gulf and Port Arthur, many miles shorter than the existing rail route. J. M. Danner, vice-president and general manager of the Waco, Beaumont, Trinity & Sabine, described the physical characteristics of the road, and declared it is indispensable to the territory it intersects and serves. The trucking of freight through that territory is not practicable, he said. Towns in the territory of his road would be practicably ruined without operation of the road.

R. C. Duff, president of the Waco, Beaumont, Trinity & Sabine, discussed the need for a port at Beaumont and Port Arthur to serve a large territory. Any allocation or consolidation of the Katy, he said, should be done only by considering the location of the Waco, Beaumont, Trinity & Sabine. The weakness of the Katy system, he continued, was in the unbalanced character of its traffic the loaded car movement southbound exceeding to a great extent the loaded car movement northbound. This condition was brought about by the fact that the territory produces oil not sent out by rail. The Beaumont-Port Arthur waterway can be placed on a parity as to mileage rates with the Houston-Galveston port and its situation entitles it to the traffic from its hinterland, which actually goes to Houston after passing through Beaumont.

The hearing was adjourned on October 9 and will reconvene in Washington on November 10 when rebuttal testimony will be presented.

THE SOUTHERN PACIFIC OF MEXICO has been damaged seriously by heavy rainfall over a length of road of 47 miles, between Querobadi and Pesqueira; and it is estimated that repairs including the construction of a new bridge over the Sonora river will require six weeks and will cost $250,000.

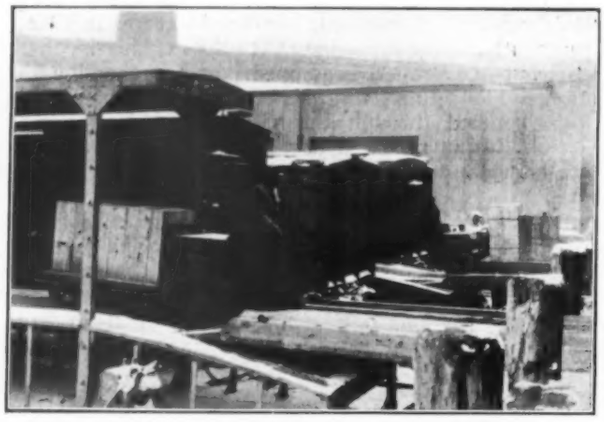
Electric Trucks at D. L. & W. Car Float Freight Stations

Effect savings where car floats at right angles to receiving platform necessitates long movement

By R. M. White

Superintendent, Delaware, Lackawanna & Western, Hoboken, N. J.

THE problem of handling westbound merchandise on the Delaware, Lackawanna & Western's New York piers has always been a difficult problem due to the many peculiarities of the local situation. At our land stations, the car layout is in practically all cases parallel with the freight house, so that highway trucks back up to doors within 50 ft. to 70 ft.



Electric Truck Leaving Car Float

of the cars; while freight has to be trucked lengthwise of the freight house to reach the proper car, the trucking distance is comparatively small, and a hand truck in almost all cases is the most economical method for handling such business.

Pier Conditions Make Trucking Expensive

At the New York piers the car layout is necessarily on floats, each with a capacity of from 10 to 14 cars. These floats are placed heading in to the receiving bulkhead, so that the distance freight has to be trucked is 300 ft. to 500 ft. from the point where it is received to the designated car. In case the business demands a larger car layout than can be accommodated on the floats at the bulkhead, it is necessary to arrange additional floats outside in tandem, which will increase the average trucking distance to from 500 ft. to 700 ft. This long distance, together with the heavy grades to reach the float because of tidal conditions, has always made hand trucking extremely expensive.

There is another disadvantage to hand trucking in such a location, and that is the fact that most of this freight is delivered to the railroads between 2 p.m. and 4:30 p.m., which calls for a maximum force at this time to truck and stow the freight. The ordinary method of operation is to put all men on the eastbound in the morning, let incoming freight pile up on the bulkhead as long as there is room, and then start the men on the westbound. All the labor is thrown on to the westbound movement in the two and one-half hours of the rush period. While this is probably the most economical method of handling pier work, if the hand truck method is used there are some disadvantages: first, in cases of bad weather, the freight piled along the front of the bulkhead is liable to get wet; and second, if the rain beats in on the bulkhead floor, damage is liable to occur. Freight stacked up in this location is, of course, easily accessible to truckman making deliveries and a great many dock shortages will naturally occur.

Labor Supply Is Growing Inadequate

Further than this, due to the necessity of hiring green or inexperienced truckers to take care of the business which fluctuates very greatly day by day, the amount of mishandling which will occur in a gang of from 40 to 60 truckers is considerable and results in expense and delays to correct such errors. The labor situation around

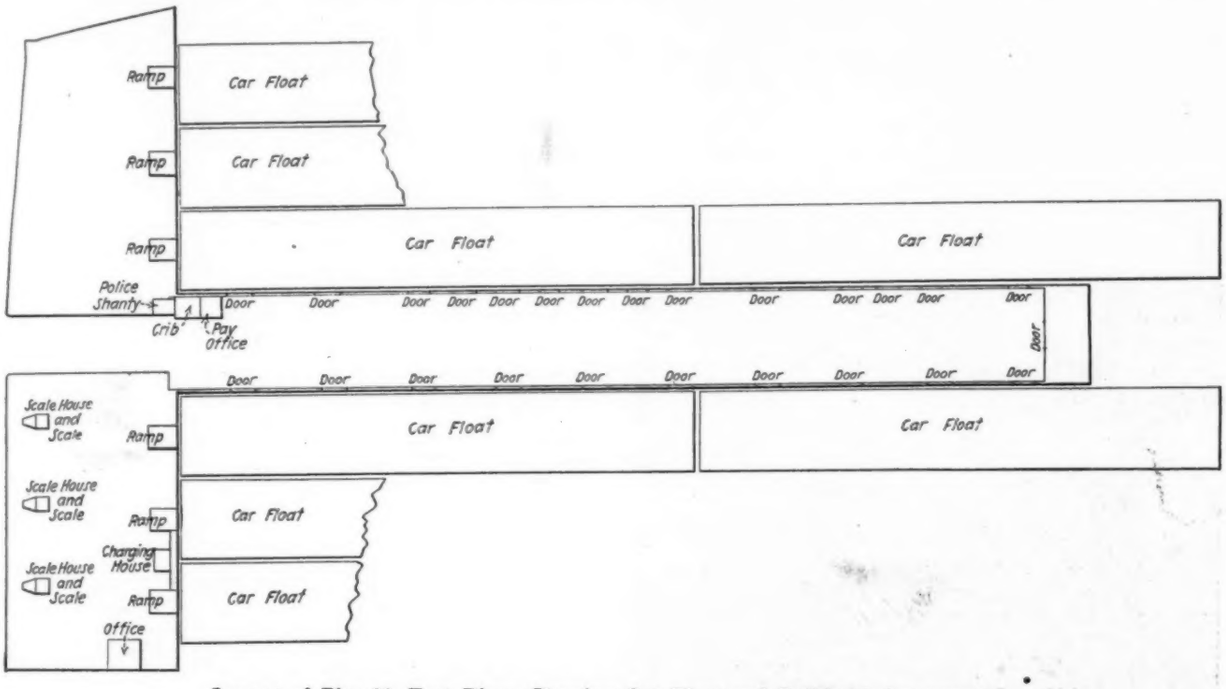
Freight from Highway Trucks is Quickly Weighed and Moved

the New York piers is getting such that it is difficult to pick up additional labor to take care of the fluctuating business.

How Tractors and Trailers Are Used

To take care of the conditions, as outlined above, a tractor and trailer system of truck operation was put into effect on a number of the piers, and this resulted in a very considerable saving of labor, due to the fact that the freight is put on trucks by the delivering truckmen so that it does not have to be rehandled. It is then put over the scales and made up into trains which are hauled by the tractors out onto the floats, where the trailers are

cut out of the train opposite the cars into which the freight is to be loaded. The stevedores pull the trailers into the cars and stow the freight. This has been a very satisfactory method of handling, except that under extreme tidal conditions there has been some difficulty due to descending grade conditions, when the number of trailers per train has to be cut down so that they will not pile up or tip over. On ascending grades at high tide the train must be cut to the capacity of the tractor to pull up the grades. This method of operation demands a float platform not less than 11 ft. in width, as the trains must be able to pass on the platform.



Layout of Pier 26, East River, Showing Car Float and Bulkhead Arrangement

Electric Trucks Have Done Away with Delay in Unloading

Trucks and Skids Recently Installed

At some of our New York piers we have recently installed another method of operation, using lift trucks and " live" skids. The live skids have somewhat larger platforms than the trailers and we have adopted as standard a skid 40 in. by 72 in. which is loaded at the front of the bulkhead in the same method as the trailers. It is then run over the scales, and after the freight has been checked as to marks and weights, a veri-check is issued which is put into a receptacle on the skid provided for it. The skid is then shoved out of the way where the lift truck can pick it up and take it to its proper car on the float. One of the advantages of the lift truck operation is the fact that it takes about 30 per cent less skids than the tractor operation, and therefore reduces the congestion on the bulkhead. In addition, on account of each skid being handled individually on the lift truck, it is possible to operate over narrower float platforms than with the tractor and trailer. Moreover,

Truck Leaving Freight Car with Load

a large proportion of the skids can be taken with the truck directly into the car, which saves stevedore's time.

Total Cost of Equipment the Same

As to the expense, as compared with the tractor and trailer operation, we find that it takes practically two

lift trucks to handle the same tonnage as one tractor, but that on account of the smaller cost of the live skids and the decreased number required, the total cost of equipment is about the same. We also find that the cost of maintenance of the lift truck and live skids is somewhat less than the cost of maintenance of the tractor and trailers.

The Lackawanna at the present time has equipped piers 41 and 68, North river, and 26, East river, with lift trucks and live skids. Pier 13, North river, is equipped with tractors and trailers.

Advantage to Shipper

This freight handling equipment has made a reduction in handling cost and almost entirely eliminated dock shortages and misloading. One of the great advantages

Interior of Bulkhead, Showing Truck in Operation

of this method of operation is that the freight is practically cleaned up at all times. This makes it possible to get floats away from the piers within a very few minutes after closing time for the receipt of freight. One of the advantages to the shippers is the fact that there is practically no delay in releasing shippers' trucks at bulkhead. The line of trucks that used to stand in the street for a long time waiting for an opportunity to get to the bulkhead and deliver freight no longer exists, and the complaints which we used to have on account of having to "punch the line" at closing time and truckmen not being able to make deliveries until the next morning, is a thing of the past. It is noticeable that the congestion which used to exist in front of the railroad freight piers where freight is handled by electric trucks no longer exists, and in this way the truck operation has perhaps benefited the shipping public even more than the railroad.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 2 amounted to 1,185,524 cars, a decrease of only 1,487 cars as compared with the peak loading so far this year in the week ended September 18. This was an increase of 72,241 cars as compared with the corresponding week of last year and of 107,776 cars as compared with 1924. This was also the nineteenth week this year in which the loadings have exceeded a million cars a week. For the 40 weeks since the first of the year the total loading has been 40,337,413 cars, as compared with 39,006,227 cars in the corresponding period of last year. Increases as compared with last years were reported in all commodity classifications except livestock, and in all districts, while both grain and livestock in the Central Western and Southwestern districts showed decreases as compared with 1924. Coal loading reached the high figure of 220,924 cars and ore loading showed an increase of 19,805 cars as compared with the corresponding week of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING—WEEK ENDED SATURDAY, OCTOBER 2, 1926

Districts	1926	1925	1924
Eastern	274,124	249,135	243,181
Allegheny	234,387	215,736	202,228
Pocahontas	60,342	57,537	49,315
Southern	168,586	167,114	147,214
Northwestern	183,598	167,304	171,145
Central Western	173,656	171,521	185,177
Southwestern	90,831	84,936	79,488
Total Western districts	448,085	423,761	435,810
Total all roads	1,185,524	1,113,283	1,077,748
Commodities			
Grain and grain products	49,599	47,752	71,152
Live stock	38,691	41,482	39,158
Coal	220,924	174,769	187,314
Coke	12,451	12,272	9,798
Forest products	71,645	70,726	66,889
Ore	71,639	51,834	48,457
Mdse. L.C.L.	277,217	271,702	259,109
Miscellaneous	443,358	442,746	395,871
October 2	1,185,524	1,113,283	1,077,748
September 25	1,182,940	1,121,025	1,087,954
September 18	1,187,011	1,098,627	1,076,847
September 11	1,031,081	975,499	1,061,781
September 4	1,151,346	1,102,785	921,303
Cumulative total, 40 weeks	40,437,413	39,006,227	36,779,691

The freight car surplus in the week ended September 25 had fallen to 124,142 cars, including 67,476 box cars, 30,205 coal cars and 8,003 refrigerator cars.

The Canadian roads for the same week had a surplus of 13,905 cars, including 12,300 box cars.

Car Loading in Canada

Only twice before have car loadings in Canada exceeded the total for the week ended October 2. In this week loadings reached the figure of 77,249 cars. The previous loading records occurred in November, 1925, when loadings for two weeks were 77,370 and 78,625.

Contrary to expectations, the high figure is not accounted for by a rush of grain in the prairie provinces. The grain still is moving slowly, owing to wet weather, and grain loadings in this week were 3,422 under the loadings for the corresponding week of 1925 and 654 cars less than the immediately previous week of this year. Miscellaneous freight showed an increase over last year's loadings of 1,228 cars, merchandise an increase of 1,756 cars, coal an increase of 1,971 cars, and other forest products an increase of 572 cars. Other commodities showed smaller increases except pulpwood which was lighter by 213 cars, the total loadings being heavier by 2,377 cars.

	Total for Canada			Cumulative Totals to Date	
Commodities	Oct. 2, 1926	Sept. 25, 1926	Oct. 3 1925	1926	1925
Grain and grain products	16,976	17,630	20,398	284,606	276,582
Live Stock	2,936	2,947	2,917	81,628	89,089
Coal	9,193	8,461	7,222	216,727	141,685
Coke	436	356	350	14,118	10,893
Lumber	3,881	3,794	3,871	142,476	140,326
Pulpwood	1,517	1,890	1,730	107,641	104,250
Pulp and Paper	2,157	1,993	2,127	93,271	79,478
Other Forest Products	3,126	2,883	2,554	121,071	109,581
Ore	2,089	1,934	1,749	67,223	54,189
Merchandise, L. C. L.	17,751	17,544	14,995	634,287	595,370
Miscellaneous	17,187	16,505	15,959	549,386	488,971
Total Cars Loaded	77,249	75,937	74,872	2,312,434	2,090,414
Total Cars Received from Connections	38,392	40,424	35,898	1,450,903	1,292,526

Delegates to Norfolk & Western Annual System Efficiency Meeting

Norfolk & Western Efficiency Meeting

Two-day intensive discussion of ways and means of improving service and efficiency

THE Norfolk & Western held its seventh annual system efficiency meeting at the Jefferson Hotel, Richmond, Va., October 8 and 9. It was a unique event in many respects. About 350 delegates, representing a cross-section of the organization, from top to bottom, met with "one increasing purpose" to consider how a more adequate, efficient, economical and courteous service might be rendered to the shipping and traveling public. This group, which included about one per cent of the entire organization, was augmented by a considerable number of guests, particularly at the opening session and at the banquet, where a large number of shippers were present.

A word of explanation is needed as to the selection of the delegates. There are at the larger stations and yards on the Norfolk & Western 27 local efficiency or better service clubs. These were formed by the employees on their own initiative to study and discuss ways and means of improving efficiency and service. Occasionally they supplement the programs with social features and it is not unusual to invite shippers and their representatives, including the shipping clerks, to join with them as their guests. The men meet on their own time. The chairmen of these clubs automatically become delegates to the annual efficiency meeting. The other delegates are carefully selected from the various departments and different parts of the system, because of their interest and good records in rendering efficient service and their ability to carry back home and spread the inspiration and information gained at the conference. Naturally, it is desirable to change the delegates as much as possible from year to year in order to reach the greatest number of employees over a period of years. The number of comparatively young men in attendance this year was a noteworthy feature of the conference.

The purpose of the meeting is two-fold: (1) To encourage recommendations for improvements in service and efficiency, both through the proceedings at the conference, and continuing through the year in the work of the local clubs; or by individuals at any time or place; (2) to bring the officers, supervisors and men of all departments into intimate contact, thus making for better understandings and the building up of a strong family spirit.

The delegates traveled to and from the meeting on an "efficiency special," slept in the Pullman cars at Richmond and lived practically as a big family, eating their meals together in a large dining room at the hotel.

Briefly, the conference consisted of an opening session on Friday morning with a special program of addresses; a breaking up into seven groups during the afternoon for the discussion and drawing up of as many committee reports; a banquet on Friday night; a consideration on Saturday morning by the meeting as a whole of the seven committee reports; a visit to the state fair in the afternoon and departure on the special train in the evening.

The conference considered all phases of operation and service under the heads of train operation, station operation, traffic, general office service, roadway and grounds, equipment, and the employees' magazine. It is an outgrowth of the freight claim prevention movement, as is indicated by the fact that the meeting is presided over by the general claim agent. The convention was opened and has been presided over in the past by Col. W. S. Battle, Jr., formerly general claim agent and recently promoted to vice-president in charge of valuation, real estate and public relations. J. B. Baskerville, the newly appointed general claim agent, succeeded him as chairman of the system efficiency meeting. This does not indicate, however, that the scope of the meeting or of the efficiency clubs is limited in any way from the broad objectives already mentioned. The general officers, including Vice-Presidents Jenks

and Herrman and General Manager Crawford, were present and took an active interest and part in the proceedings.

A Few Records

Incidentally the Norfolk & Western is proud of the fact that in June, 1926, it led all of the railroads in the United States over 500 miles in length in the smallest percentage of unserviceable locomotives; smallest percentage of unserviceable freight cars; highest gross and net tonnage per train; highest average net tons per loaded car, and greatest density of traffic. This service was rendered without car shortage, congestion or delay. The average time of payment of claims is now only 36 days. During 1925 only 43 instances of legal action against the company for loss and damage to freight were reported and of this number 22 suits were filed in cases where no previous claim had been made.

July, 1926, was a record month as to the dumping of tidewater coal at Lamberts Point, when 1,068,682 gross tons were dumped; the best previous record was 863,403 gross tons during July, 1920. Revenue cars loaded on line and received from connections during July, 1926, amounted to 147,372 cars; the best previous record was 145,622 cars during October, 1925. Net tons of coal loaded during July, 1926, amounted to 4,038,385; the best previous record was 3,955,037 net tons loaded during October, 1925.

The program of the Friday morning session included addresses by Dr. W. Brownley Foster, representing the mayor of Richmond; H. G. Shirley, chairman of the Virginia State Highway Commission, who spoke on the relation of good highways to the railways; and Joe Marshall, special representative of the American Railway Association, who spoke on claim prevention. Short talks were also given by Vice-Presidents Jenks and Herrman, General Manager Crawford, and Roy V. Wright, managing editor, *Railway Age*.

Col. W. S. Battle, Jr., acted as toastmaster at the banquet on Friday evening and the principal address was made by Col. John R. Saunders, attorney general of Virginia. Short talks were made by several prominent shippers, including Joseph A. Dart, Alvin M. Smith and J. Scott Parrish, president of the Chamber of Commerce.

Committee Discussions

The most intensive work of the conference was undoubtedly that which took place on Friday afternoon. The seven committees, about 50 members on each, formed little conventions of their own and proceeded to draw up recommendations on the subjects assigned to them. Here each delegate had an opportunity of expressing himself—and they did it most effectively and with excellent results, as was indicated by the reports and recommendations. Taking an example from the issues of the *Daily Railway Age*, which is published during the A. R. E. A. and A. R. A. Mechanical and Purchases and Stores Divisions meetings, the staff of the Norfolk & Western Employees' Magazine rushed these reports to the print shop and had them ready for distribution at the meeting on Saturday morning. Since they included material equivalent to eight or more pages of the *Railway Age*, only brief extracts can be given in the following paragraphs:

Train Operation

James O'Keefe, trainmaster, Bluefield, W. Va., was chairman of this committee: Too much stress cannot be placed on the importance of a rigid classification of freight trains. Such handling may cost a small amount of money more in the operating yard, but the corresponding cost at intermediate yards and at destination will be much less and in addition the movement of the classified train will be accelerated.

Bad order cars on line, particularly hot journals, form one of the most detrimental factors of railroad and expense. The only way to lessen the number of hot boxes is to remove effectively the causes for them. Inspection should be made with the utmost care and rigidity.

Interference, ofttimes unnecessary, due to track maintenance, is another source of prolific delay to trains. It is altogether possible for an improvement to be made in this feature of our train operation, and it is the recommendation of your committee that the energies of division organizations be concentrated to such an end. Track foremen should communicate at frequent intervals with train dispatchers in order to be acquainted at all times with the approach of trains; with such advance information a great many unnecessary stops may be eliminated.

A larger proportion of all rough handling occurs in yards. It is imperative for this feature of yard work to be given a comprehensive study. We would like to recommend, also, that the use of shock detectors be freely tested out.

Station Operation

The chairman of the committee on station operation was Agent C. H. Brown, Columbus, Ohio. Among its recommendations were the following: Where such an arrangement is feasible, it is recommended that the freight delivery clerks use the telephone for notifying consignees of the arrival of shipments, and urging the prompt removal of freight from the station warehouse. It can be done in a courteous way and with excellent results.

There is nothing more attractive than a pleasing and cordial atmosphere at the public business windows of the station. It is annoying to the caller to be referred from window to window, or from desk to desk in his effort to secure the information which he seeks. He should not be directed, but should be accompanied to the proper person from whom the information wanted may be secured.

The party calling the station office by telephone may be both patron and guest—but always the latter, and every demand of hospitality requires that his call shall be promptly acknowledged and courteously received.

The bill of lading, when signed by the shipper and railroad agent, becomes a contract as binding in its terms as the most ironclad agreement that can be executed in any line of business. It therefore behooves our representatives to be as careful in executing a bill of lading as they would be in executing a contract in any other business.

Traffic

General Agent F. W. Jones, Cincinnati, Ohio, was chairman of the committee on traffic. Among other things it reported: Answer phones promptly—phone attitude and voice, if agreeable, are an asset and if not, quite a detriment. Be posted on schedules—passenger and freight. Know your package car layout and through train service. Pay especial attention to small shippers and receivers who have no traffic manager and are dependent on you for rate, route and schedule information; bear in mind that some day these patrons may become our best customers. Never over-promise and give just a bit more than is expected.

The best efforts of the most expert solicitor are fre-

quently destroyed by the discourteous and grouchy employee at ticket window and on trains. Courtesy should begin with solicitation and end only at the passenger's destination.

We should continue close supervision of our merchandise movement at various transfers with the idea of establishing new and more distant break bulk points for package cars.

General Office Service

E. J. Tice, chief clerk to the superintendent of transportation, Roanoke, Va., was chairman of the committee on general office service. Among its many recommendations were the following:

It is recommended that the transportation department make a survey of the classification of preference freight trains and revise existing instructions and embody in a printed loose leaf booklet, which would be kept up-to-date by issuance of new leaves, for information of yard employees.

To save many overs and shorts (which result in claims) the Norfolk & Western should adopt a special shipping tag for household goods, requiring each piece of freight to be numbered, these numbers appearing on the bill of lading and waybill. This would make the whole transaction easy to handle and there would be no difficulty in checking this kind of freight.

Roadway and Grounds

The chairman of this committee was Superintendent L. C. Ayers, Roanoke, Va. The moral effect of well kept property, said the committee, is of inestimable value in creating a favorable impression on outsiders, and is also a stimulant to us.

Roadway injuries are now one of our most serious problems, and if a reduction in them is to be made, special attention should be directed to the following subjects: (1) interest of the division officer in charge of roadway work; (2) active interest of roadmasters and section foremen; (3) proper instruction of new men in the safe ways of doing their work; (4) close personal supervision of dangerous operations; (5) condition of track tools; (6) safe motor car operation.

Grade Crossings

We must undertake to put the grade crossings in such condition that accidents thereon may be minimized. * * * * * We are participating in the campaign which is put on yearly by the American Railway Association in an attempt to educate the public to the danger at grade crossings.

Equipment

The chairman of the committee on equipment was C. D. Minter, division car inspection, Portsmouth, O. The report included details about important improvements which had been made, or were in the process of being made, on the various types of freight equipment. Attention was directed to the fact that a very considerable reduction in coal claim payments had been made because of some of these improvements. Suggestions were also made as to the transferring of freight from damaged cars, the loading and stowing of freight and the conservation of equipment in the handling of package freight.

Employees' Magazine

The committee on the employees' magazine, under the chairmanship of Associate Editor F. E. Chabot, Roanoke, Va., was composed of 54 representatives from all departments, who are acting as associate editors and correspondents. Among other things it recommended the publication of fiction stories pertaining to railroad life, as well as more material on safety, the relief and pension departments and train service activities. A desire was also expressed for more humour—a page at least—as well as articles of interest to the home and particularly to the children. There is also a demand for more timely articles about new facilities, new projects undertaken and new equipment purchased or built, and other articles not too technical in character. It was also suggested that the front cover page, in addition to showing scenes on and about the railroad, should be more in keeping with the seasons and holidays.

Associate Editors and Correspondents of Norfolk & Western Employees Magazine Who Attended the System Efficiency Meeting

Conclusion

Not the least interesting part of the meeting was the last few moments before adjournment. Spontaneously several members expressed their reactions and sentiments. Obviously there are opposing interests involved in many of the questions which concern more than one group or department. Frank discussion develops the facts which confront the various interests. It is not possible fully to satisfy everybody. As a locomotive engineer tritely expressed it: "Go back home and do the work the best you can with what you have."

Centenary of the Granite Railway

Massachusetts commemorates the origin of the first American railroad—Addresses by Governor Fuller, R. H. Newcomb and others

THE New York, New Haven & Hartford has this week celebrated a centenary—only six months behind the New York Central; it is that of the Granite Railway, three miles long, in Quincy and Milton, Massachusetts, of which the greater portion of the right-of-way is now a part of the Granite branch of the New Haven system. The road was built in 1826, and was opened for traffic on October 8 of that year. Its rails were of wood and its motive power was horses—or gravity—and the business was wholly freight; but it was a railroad, the first one in America to convey persons or goods from one place to another.

The town of Milton has been engaged for two years in preparing for the celebration, and churches, schools and other organizations were active participants. Addresses were given in churches on Sunday morning and evening October 10, and exercises were held in a number of schools on Monday. In the lower grades of the schools pupils had been engaged for some weeks in making a study of the Granite Railway and of the subject of railroads generally.

The principal exercises were at East Milton Square on Tuesday morning, the 12th, the program being managed by a committee appointed by the town, the New Haven road co-operating. The town committee consisted of Rev. Warren Prince Landers, Miss Eleanor P. Martin, Mrs. Stephen P. Hurd, Percy Sheldon and Philip L. Spalding.

Addresses were given by Alvan T. Fuller, governor of the state; Robert H. Newcomb, assistant to the vice-president of the New Haven road; Charles A. Ross, president of the city council of Quincy, and Dr. Paul Revere Frothingham, president of the Bunker Hill Monument Association.

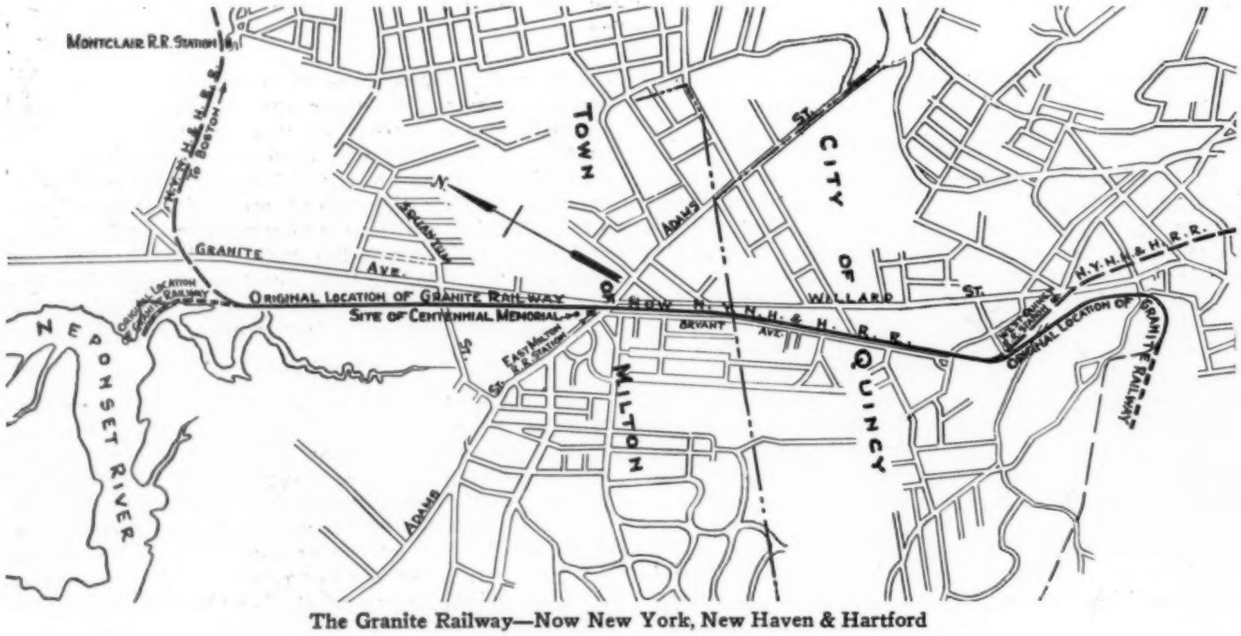
A commemorative tablet on the grounds of the railroad station, unveiled by Mrs. Frances M. Adams, granddaughter of Gridley Bryant, the projector and engineer of the railroad, was dedicated in an address by Mr. Landers, chairman of the committee, and accepted by Roger Wolcott, chairman of the Selectmen. This tablet reads:

> Near this site
> THE FIRST AMERICAN RAILWAY
> WAS OPENED OCTOBER 7, 1826
> From Quincy to Neponset River,
> Laid to Convey Granite
> To Build the Bunker Hill Monument
> This Tablet
> Erected October 12, 1926
> At Centennial of Event
> by the
> TOWN OF MILTON

In the afternoon, the president and directors of the Granite Railway Company received visitors at the foot of the incline, West Quincy. A historical exhibit was displayed in the East Milton Station.

Governor Fuller in his address eulogized the pioneers who projected the railroad and who "laid the foundation stone of our great railway system of today." Dr. Frothingham spoke of the Bunker Hill monument and its history, and predicted that with the great inventions and developments accompanying the railroad history of the past 100 years, the future is going to be characterized by highways of fraternal communion and good fellowship, so that there will be no more battles of Bunker Hill or any other hill.

Robert H. Newcomb, speaking for Vice-President A. P. Russell, and representing the New York, New



The Granite Railway—Now New York, New Haven & Hartford

Milton and Quincy, Massachusetts.

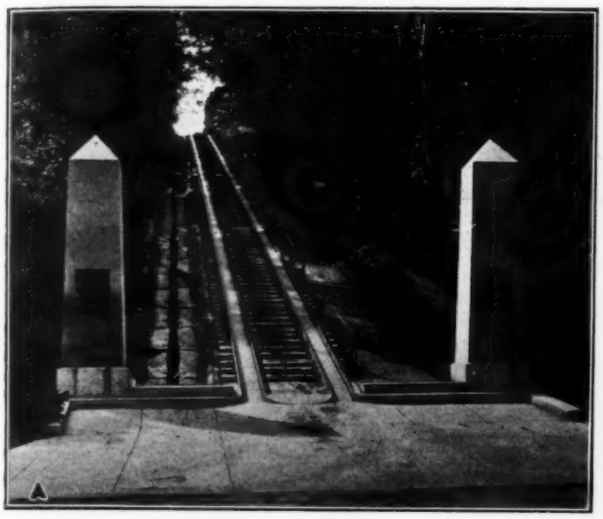
Haven & Hartford Railroad, which had co-operated heartily with the town authorities in preparing the celebration, briefly sketched the progress of railroads in America, from this the first accomplished effort of any type of railway.

Back of Mr. Newcomb and the other speakers, as they addressed the closely packed audience, stood New Haven locomotive No. 3304, a 4-8-2 type, weighing, with its tender, 519,000 pounds. In front of the engine stood the replica of the first car the contrast affording apt illustrations for the speakers' periods.

The greater part of the original location of the Granite Railway is now occupied by the track of the New York, New Haven & Hartford as shown by the heavy line on the map. This part of the New Haven (which came into the system when the Old Colony was acquired by the New York, New Haven & Hartford) is a five-mile line leaving the main line of the Plymouth division at Atlantic, Mass., 5.5 miles south of Boston, and rejoining it at Braintree, 10.1 miles from Boston. The interest of the Old Colony Railroad in the Granite Railway dates from 1846 and passenger trains were first run in October, 1871. The stations on this five-mile line, with their distance from Boston are:

	Miles		Miles
Atlantic	5.5	West Quincy	8.7
Montclair	6.1	Braintree	10.9
East Milton	7.6		

The photographs reproduced herewith, from Rice Studio, Quincy, give a good idea of leading characteristics of the old railway. The tablet at the right in our first photograph (A) reads as below:



Foot of the Incline; Track for Auto Trucks

Remains of Original Wharf, Neponset River

THIS GATEWAY MARKS THE
FOOT OF THE OLD INCLINE, A PART OF THE GRANITE RAILWAY. * * * * * * * * *
THE IDEA OF THIS RAILWAY WAS CONCEIVED AND CARRIED OUT BY GRIDLEY BRYANT, IN THE FACE OF GREAT OPPOSITION BUT SUPPORTED BY THOMAS HANDASYD PERKINS, TO TRANSPORT THE STONE FOR BUNKER HILL MONUMENT FROM THE QUARRY TO TIDEWATER IN NEPONSET RIVER, A DISTANCE OF TWO AND THREE-QUARTER MILES. * * * *
WORK WAS BEGUN APRIL 1, 1826, AND THE COMPLETED RAILWAY WAS OPENED OCTOBER 7, 1826. * *
Erected by the Granite Railway Company, 1921

The following details are taken from a handsome booklet of 30 pages which has been issued by the Granite

Monument and Frog Near Foot of Incline

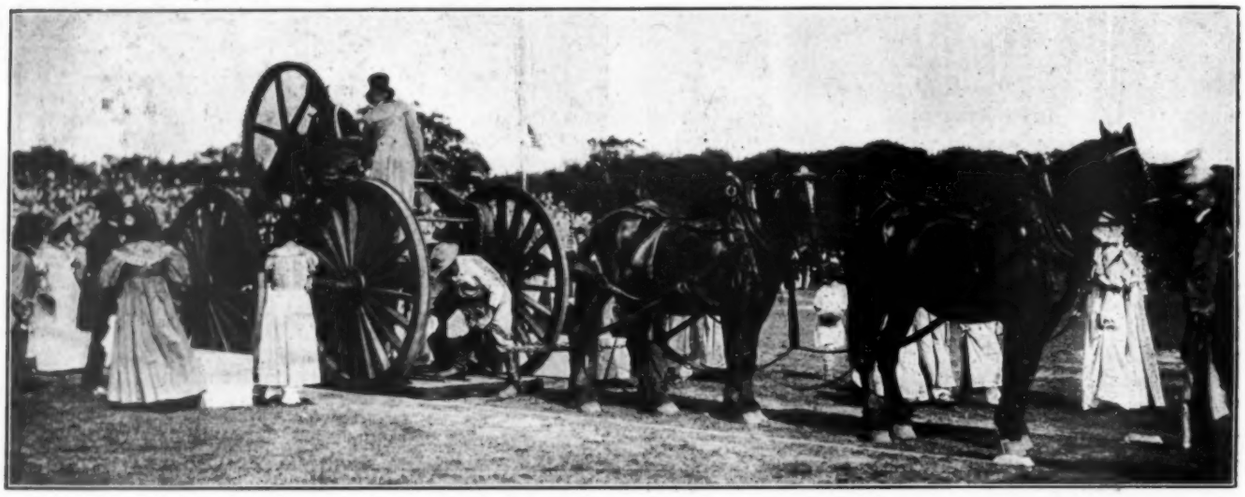
This frog was exhibited at the World's Fair, Chicago, 1893.

N. Y., N. H., & H. Granite Branch, Looking South

The incline shown in the first photograph (A) appears in the right center.

Railway Company. (This company, H. M. Faxon, president, still exists and is proprietor of the quarry). This book is entitled "The First Railroad in America; a history of the origin and development of the Granite Railway at Quincy, Massachusetts." The railway was opened on October 7, 1826, for use in transporting granite from a quarry in Quincy to tidewater at the Neponset river, in the adjoining town of Milton; the granite there to be loaded on lighters to be carried, about ten miles, to Charlestown where it was used as the material for Bunker Hill Monument.

The book is profusely illustrated. There is a picture of the monument; a map made in 1830; a protrait of Gridley Bryant, projector and engineer of the railroad; and one of Thomas H. Perkins, the first president of the railway; also a half-tone engraving showing a duplicate of the first car used on the railway. This duplicate was made in 1925, and conforms to Bryant's original plans. It was made for use in a pageant commemorating the three hundredth anniversary of the settlement of the town of Quincy. Other illustrations in the book show two obelisks at the entrance to the quarries and other scenes.



Replica of the First Car of the Granite Railway

This replica was made for a pageant at Quincy in 1925.

The Bunker Hill Monument Association was formed on May 10, 1823, and the quarry was purchased in June, 1825. There were some propositions—and even experiments made—looking to the digging of a canal, but in the autumn of 1825 Bryant laid before the directors his proposals for a railroad and in January, 1826, the directors petitioned the legislature of Massachusetts to be incorporated under the name of the Granite Railway Company. The bill was passed on March 4, and ground was broken on April 1.

Bryant, in a letter describing the road, said that the deepest cut was 15 ft. and the highest fill, 12 ft. Commencing at the wharf the ascending grade was at the rate of 26 ft. to the mile; then 13 ft., then 36 ft. Next, the track rose 84 ft. by an inclined plane 315 ft. long on which the cars were moved by means of an endless chain. At the head of the plane, says Bryant—

"I constructed a swing platform to receive the loaded cars as they came from the quarry. This platform was balanced by weights, and had gearing attached to it in such a manner that it would always return (after having dumped) to a horizontal position, being firmly supported on the periphery of an eccentric cam. When the cars were out on the platform there was danger of their running entirely over, and I constructed a self-acting guard, that would rise above the surface of the rail upon the platform as it rose from its connection with the inclined plane, or receded out of the way when the loaded car passed on the track; the weight of the car depressing the platform as it was lowered down.

"I also constructed a turn-table at the foot of the quarry, which is still in use (1859) as originally constructed. The railroad was continued at different grades around the quarry, the highest part of which was 93 ft. above the general level; on the top of this was erected an obelisk or monument 45 ft. high."

At Squantum Street, East Milton, there is a small monument made of a section of the original superstructure, and a frog, bearing appropriate inscriptions. The frog was exhibited at the World's Fair in Chicago in 1893.

The track was made of wooden rails 12 in. high, on top of which were iron plates 3 in. wide and ¼-in. thick. The gage of the track was 5 ft. Where the railroad crossed public highways the rails were of stone, with iron plates 4 in. wide. The inclined plane was double track.

The first car, which was built by Bryant, cost $600, and its capacity was six tons. Its wheels were 6 ft., 6 in. in diameter and the load was suspended on a platform beneath the axles. Visitors traveled long distances to see this railroad and in such numbers that an enterprising citizen opened a tavern nearby.

On October 1, 1834, Ross Winans of Baltimore, secured a patent for an eight-wheel car, to be used on the Baltimore & Ohio. In a suit against the New York & Erie for infringement of this patent, Winans lost his case because of evidence that Bryant had designed such a car earlier. What Winans really did, says our author, was to develop Bryant's idea into a form that could be used in trains at high speed. Bryant however, never enjoyed any financial benefit from his invention.

THE TEXAS "OPEN PORT LAW," making it a felony to interfere with railroad shipments moving to port, was held unconstitutional by the Court of Criminal Appeals at Austin, Tex., on October 6. At the same time the court revoked a one-year sentence imposed on A. W. Ratcliffe for assaulting a railroad guard. This law figured prominently in the nation-wide shopmen's strike of 1922. It made assault on a railroad worker a penitentiary offense, where otherwise it would be punishable by jail sentence.

Bridge and Building Men Meet in Richmond

Sessions crowded with valuable reports and papers bring out much practical information

MORE than 400 persons, including more than 250 railway men, gathered in the Hotel Jefferson, Richmond, Va., on Tuesday morning, Oct. 12, when C. W. Wright, master carpenter of the Long Island Railroad and president of the American Railway Bridge and Building Association, called the thirty-sixth annual convention of that organization to order. The members were welcomed to Richmond by J. Fulmer Bright, mayor, and by Eppa Hunton, president of the Richmond, Fredericksburg & Potomac.

The attendance and interest exceeded that of recent years. More than 250 persons from western points traveled to Richmond on a special train provided by the Big Four and the Chesapeake & Ohio from Chicago and Cincinnati.

In addition to the reports of eight committees, addresses were made by R. H. Aishton, president of the American Railway Association, on the present problems before the railways; by L. B. Allen, assistant to the operating vice-president, Chesapeake & Ohio, on the Organization of a Maintenance of Way Painting Force; by F. T. Carrow, chairman safety section, American Railway Association, on The Reduction of Accidents to Maintenance of Way Employees; by Earl Stimson, chief engineer of maintenance, Baltimore & Ohio, on The Framing of Bridge Timbers Before Treatment.

W. D. Faucette, chief engineer, Seaboard Air Line, addressed the convention on Wednesday afternoon on Public Relations Opportunities in the Bridge and Building department, an abstract of which will appear in a later issue.

The committee reports, the addresses, and the individual papers are abstracted below.

R. H. Aishton Addresses Convention

Speaking at the afternoon session on Tuesday R. H. Aishton, president of the American Railway Association, stressed the broader scope of the works of the bridge and building department. "The railways of the world," he said, "have been closely linked up with the advancement of civilization and to a large extent the growth of transportation and the advancement of bridge principles and construction are a measure of the growth of civilization. Bridges are an important link in the great chain of railways and essential to safety and service." After quoting statistics to show the rapid growth of track loadings in recent years he summed them up with the statement, "The load passing over the tracks of our railroads has increased 40 per cent in the past six years—and it is bound to increase, which makes it evident that it is not your problem to keep up with this progress, but to keep ahead of it. The railroads are going ahead or the nation will die. Upon your endeavors and initiative will depend to a large extent the future of the railroads."

Commenting on the unprecedented car loading records of recent months which have been accomplished without any sign of a car shortage, Mr. Aishton said that "this has had a very important part in molding favorable public opinion toward the railroads, which is essential to increased railroad earnings. The part of the men in your work is to further this favorable public feeling by doing your work better and more economically."

Touching on some of the present-day problems of the railroads, and mentioning specifically waterways, motor buses and truck and aeroplane transportation, he raised the question, "What is the answer to these problems?" and answered it by saying, "Adequate and efficient service performed in the most economical manner. Your organization can have an important part in making this answer, and in making such an answer, there will be no question of competition.

Touching on the question of safety, Mr. Aishton expressed the hope that the goal set by the Safety Section of the A. R. A. for a reduction of 35 per cent in the number of accidents to railroad employees, by 1930, would be reached in 1927, and stated that in his opinion this could be accomplished with the co-operation of all concerned.

Mr. Carrow Presents Accident Statistics

In an address presented on Tuesday evening Mr. Carrow analyzed the accidents occurring among maintenance of way employees and solicited the aid of supervisory officers in their elimination. He showed the mental characteristics which contribute to accidents and suggested precautions which would curb them.

At the closing session on Thursday morning the following officers were elected—president, Elmer T. Howson, western editor, *Railway Age*, Chicago; first vice-president, F. C. Baluss, engineer of bridges, Duluth, Missabe & Northern, Duluth, Minn.; second vice-president, Maro Johnson, assistant engineer, Illinois Central, Chicago; third vice-president, J. S. Huntoon, assistant bridge engineer, Michigan Central, Detroit, Mich.; fourth vice-president, C. S. Heritage; bridge engineer, Kansas City Southern, Kansas City, Mo., secretary-treasurer C. A. Lichty (re-elected) inspector, Chicago & North Western, Chicago; assistant secretary, F. E. Weise, engineering department, Chicago, Milwaukee & St. Paul, Chicago; members executive committee W. T. Krausch, engineer of buildings, Chicago, Burlington & Quincy, Chicago; R. C. Bardwell, superintendent water service, Chesapeake & Ohio, Richmond, Va., and H. I. Benjamin, assistant division engineer, Southern Pacific, Portland, Ore. Minneapolis, Minn., was selected as location for next convention.

Protecting Structures Over Tracks from Locomotive Gases

No method gives an absolute and permanent protection against smoke and gases but certain conclusions can be drawn from the data collected.

1. Paint delays, but does not check, the deterioration of a structure except for high clearances. The expense of maintaining structures with paint where clearances are low is not justified by the results obtained.

2. The use of concrete for encasement of steel or reinforced concrete construction is usually satisfactory for clearances of 22 ft. or more without additional protection by blast plates. For clearances less than 22 ft., blast plates should be used to protect the concrete.

3. Gunite for new work and for repair work has proven satisfactory and is recommended for more general use.

4. Wooden blast plates are being used by a number of railroads, but the maintenance costs are high, by reason of the rapid deterioration of the fastenings.

5. Blast plates of transite, magnesia board, etc., are used to some extent, but the committee is not informed as to their lasting qualities.

6. Cast iron and steel blast plates are used extensively and satisfactory results are reported. Cast iron plates are preferred to rolled steel plates by reason of cast iron being less subject to corrosion.

7. The attachment of any sort of blast plate to a structure should be so designed that the fastenings will not be exposed to the action of the blast. Care should be taken to provide a sufficient number of supports, especially for the metal plates, and, if possible, the fastenings should be embedded in concrete.

8. Structures should be designed, whenever possible, so as to eliminate pockets on the under side and to permit the rapid diffusion of the gases. This applies to bridges and viaducts, as well as to enginehouses and train sheds.

Committee: F. H. Masters, chairman (E. J. & E.); L. B. Alexander, vice-chairman (M. C.); P. B. Spencer (N. Y., N. H. & H.); A. E. Bechtelheimer (C. & N. W.); W. L. Smith (T. R. R. A. of St. L.); B. F. Stidfole (Penna.); F. E. Schall (L. V.); and F. A. Taylor (B. & O.).

Discussion

A number of members described various expedients devised to protect metal structures against corrosion. W. T. Krausch, C. B. & Q., stated that as a result of excellent service from round houses with roof trusses of wood and wrought iron for periods up to 35 years it is the standard practice of that road to build the walls of round houses of reinforced concrete or other non-combustible materials with a roof of mill construction, possibly treated.

The Use of Motor Cars by Bridge and Building Gangs

[The committee assigned to the subject, "The Use of Motor Cars by Bridge and Building Gangs," presented an excellent review of the present state of the art in motor car design and construction but included in its report only a limited amount of information in respect to the use of these cars in bridge and building work. The following abstracts from the committee reports relate to general considerations which have an important bearing on the utilization of cars and their selection for particular classes of service.]

With the increased traffic on the railroads, together with the high cost of work train service, it has developed upon the maintenance of way officers to plan and arrange their work so as to make use of motor cars for transporting material and eliminate work trains whenever possible. Since the development of motor cars to a high degree and their use in connection with trailers, it is now possible to utilize them for transporting materials and equipment that formerly required the service of a work train, with resultant savings in dollars and cents. In many cases the motor car has become a necessity for transporting gangs to their homes for week ends due to the curtailment of passenger train service. In an emergency, such as a washout or burnout, a motor car is indispensable.

Motor Cars Classified

Motor cars have been divided into three classes, as follows: Class A, light inspection cars weighing not over 550 lb.; Class B, regular gang cars weighing not more than 1,000 lb. and Class C, heavy duty cars weighing over 1,000 lb.

Class B cars are standard for the average gang. They are made both direct-connected and with a free running engine. They are general utility cars having a seating capacity up to eight men and are capable of pulling one or more loaded trailers. These cars can be handled by two men when necessary. During the past year a two-speed transmission has been designed for this class of car to permit hauling heavier loads at low speed but this obviously adds weight to the car and when this feature is added it merges into a Class C car.

The Class C car is a standard gang car on many railroads. It is a heavy duty car with a seating capacity up to 10 men and is capable of pulling several loaded trailers. Most of these cars are made with a free-running engine. They are practical cars for bridge gangs by reason of their capacity for handling large gangs of men and hauling materials on trailers.

The Selection of a Car

There is a large field from which to select a motor car for a bridge and building gang. There is keen competition in the motor car field and at the present time there are about a half score of different makes from which to choose.

It would be false economy to purchase a certain car because it has been adopted as standard when the economical handling of the work of the gang demands a different car. Therefore, considerable thought and study should be given to the selection of a motor car that it will serve its economical purpose for the gang and at the same time meet the policy of the railroad with respect to standardization.

The main points to consider when choosing a motor car are first cost, adaptability, weight, pulling power or capacity, sturdiness, endurance, accessibility of parts for adjustment and repairs, economical fuel consumption and economical maintenance.

The push car was the first vehicle used by the railroads for transporting men and materials on the track. It is now in reality a trailer. There has been a tendency in the past to neglect the trailer and not give it the attention it deserves. A properly constructed trailer, adequately maintained will go a long ways to reduce the operating cost of the motor car.

Committee: V. E. Engman (C. M. & St. P.), chairman; H. H. Eggleston (C. G. W.), vice-chairman; G. W. Koontz (St. L.-S. F.); W. F. Martens (A. T. & S. F.); T. B. Turnbull (A. A.); T. N. Heron (A. & V.); and G. L. Sitton (Sou.).

Discussion

The discussion of this report centered largely around the relative merits of center load and side load inspection cars. While admitting the greater safety from derailment of center load cars, a number of men favored the side load car because of its greater ease of removal from the track in an emergency. The advantage of a free running engine for bridge and building service was also stressed.

The Organization of a Maintenance of Way Painting Force

By L. B. Allen
Superintendent Maintenance of Way, Chesapeake & Ohio, Richmond, Va.

There are many ways of handling maintenance of way painting, ranging from the haphazard method of painting the structures spasmodically as forces are in the neighborhood, or as the appropriation will permit; painting with small paint gangs scattered over the line during the summer season to be disbanded when winter comes; or programming the work to be done, organizing the force to do it and proceeding in an organized, orderly manner to spread the work uniformly throughout the year and from year to year.

In 1924 the Chesapeake & Ohio Railway decided to reorganize its painting practice. Beginning in January, 1925, the painting program was organized on an all year system basis.

The former practice was to use division forces on a strictly seasonal basis, frequently adding painters to carpenter forces and resorting to other makeshift methods. Forces were organized in the spring, built up during the summer and laid off in the fall. The result was a heavy labor turnover, inexperienced painters, poor morale, high cost and inferior work. Equipment was misplaced and scattered after the forces were disbanded for the winter.

The geographical and climatic conditions on the Chesapeake & Ohio permit of outside work being done on some parts of the line at all seasons. There is also much inside and protected work which can be done during the winter. At the Newport News Atlantic tidewater terminal there are a number of important and extensive structures, both frame and metal, which require frequent painting on account of salt air exposure. The climate is such that outside painting can be done practically all the year.

The situation was studied and a tentative schedule covering an all-year program was worked up. It was found practicable to keep a uniform force employed all year by using the forces on the east end of the line during the winter months and on the west and north during the summer months, thus eliminating the many objectionable features caused by intermittent forces. The organization of the painting on a system basis required that the supervision of the work be taken over by a system supervisor, thus affording opportunity for standardization of methods and materials.

The Chesapeake & Ohio is committed to the divisional form of organization in the maintenance of way department and in the organization of the system painting plan the requirements of a divisional organization were adhered to. Painting budgets are prepared by the division officers, painting gangs are carried on division payrolls, material used is accounted for on the division reports and the division officers have immediate supervision over the work, subject to the general supervision of the system supervisor. Programs are not changed without the approval of the system supervisor.

Four system paint gangs were organized and provided with modern, comfortable and adequate camp car equipment. Each outfit was provided with modern painting equipment, including a paint spraying machine with gasoline driven compressor, motor car and trailer, scaffolds, ladders, etc. Whereas 8 to 12 paint gangs were formerly used during a season, it was estimated that by scheduling the work, 4 system gangs of about 14 men each would keep the bridges, buildings and structures in proper uniform condition at all times.

The basis of gang organization provides a foreman, 6 first class and 4 second class painters, 2 helpers and a cook. The organization is, of course, flexible and can be increased or decreased by the number of men in the gangs, or by gangs as conditions demand. On extra large jobs it has proved profitable to increase or combine gangs. In one instance a gang was increased to 50 men to paint an exceptionally large bridge.

In the general reorganization on a system basis, the foremen and men were carefully selected. No effort was made to employ experienced painters; instead preference was given to young men who would adapt themselves to the peculiar conditions met in railroad painting.

The success of the general scheme of organized system painting forces has been fully demonstrated in the two years that it has been in effect. Under the former practice of painting by small seasonal division forces during a year's program, just previous to the reorganization, 12 or 14 gangs were employed with an expenditure for labor and material of about $180,000. This year with the system organization practically the same territory, structures are being covered at an estimated expenditure of $67,000, accomplishing approximately the same amount of work. This is a reduction of about 60 per cent. The system organization lends itself to the use of paint spraying machines to better advantage. There is undoubtedly great economy in the use of these machines. We are getting an average of 375 sq. ft. per gallon on first coat work with spray. One other advantage of system organization was recently demonstrated in a sudden change of program.

The anticipated favorable results in keeping down the labor turnover have also been fully realized. After two years in which the system has been in effect, there are now 80 per cent of the original employees on the forces. Under the old system the labor turnover was 75 per cent to 80 per cent each year. Maintenance of way painting by system organization and the use of permanent all year painting forces is practical, economical and desirable. This has been clearly demonstrated and all that was expected of it has materialized.

E. L. Wigglesworth, general supervisor of painting, has been responsible for the installation and effectiveness of the system of painting and organized schedule by system forces.

Pumping Equipment for Various Kinds of Service

Water supply pumping equipment may be divided into types for (1) surface supplies and (2) deep well supplies. As a general rule surface water supplies are preferable to deep well supplies.

Pumps for surface supplies may be generally classed, with respect to the application of energy from the prime mover to the water, as (1) reciprocating (piston or plunger) pumps and (2) centrifugal pumps. The common types of reciprocating pumps are the single cylinder double acting, duplex double acting and triplex single acting. The reciprocating pumps have long been the most popular surface type and it is only compara-

tively recently that they are being displaced by the centrifugal type.

The design of centrifugal type pumps has now been standardized to a large extent, the common types being the (1) turbine and (2) the volute. The turbine pumps, with diffusion vanes, are designed and adapted for heads of 150 ft. and over. The number of stages required is usually calculated in multiples of about 100 ft. The volute pumps, without diffusion vanes but with spiral casing designed to change velocity head to pressure head, are used for heads under 150 ft. The volute pumps may be further classed as single or double suction, open or closed impeller. The most generally used centrifugal pump is the double suction volute type with closed impeller and with the casing split horizontally on the center line affording easy access of inspection and cleaning.

Reciprocating	*Centrifugal*
High first cost.	Low first cost.
Excellent durability.	Good durability.
Good Efficiency.	Fair efficiency.
Maintains good efficiency for varying conditions of head and delivery.	Is not efficient for constant variations in head or delivery.
Will handle high suction lifts.	Not satisfactory for high suction lifts.
Easy to prime when necessary.	Must always be primed.
Low maintenance costs.	Very low maintenance costs.
Heavy weight requires substantial foundation.	Light weight and less substantial foundation.
Large floor space.	Small floor space.
Noisy in operation.	Little noise in operation.
Discharge is pulsating.	Discharge is non-pulsating.
Liability of damage to pump or pipe lines by closing of valve on discharge lines.	Not injured by sudden closing of valve on discharge line.
Not successful for handling sandy water.	Little injury from handling sand and gritty matter.
Speed of operation is low, requiring reducing gears for motor drive.	Speed of operation is high and very well adapted to direct motor drive.
High starting torque.	Low starting torque.

Deep Well Supply Equipment

Pumps for deep well supplies may be generally classed as (1) deep well reciprocating pumps, (2) deep well centrifugal or turbine pumps, (3) air lifts. The most common types of deep well reciprocating pumps are the (1) single plunger, single acting, (2) single plunger, double acting, and (3) double plunger, single acting.

Reciprocating	*Turbine*	*Air Lift*
Medium first cost.	High first cost.	Low first cost.
Low capacity.	High capacity.	Very high capacity.
Usually limited to 300 ft. to 400 ft. setting.	Usually limited to 150 ft. to 200 ft. setting.	Limited only in setting by limitation of compressor.
Suitable for high head above ground.	Even flow.	Intermittent flow.
Good efficiency.	Suitable for high head above ground.	Requires booster for high head above ground.
High maintenance.	Fair efficiency.	Low efficiency.
Not suitable for sandy water.	Medium maintenance.	Low maintenance.
Well hole must be fairly plumb.	Fairly satisfactory for sandy water.	Unaffected by sand in water.
	Perfect alinement is necessary.	Can be used in crooked holes.

Type of Power

Steam, oil engine, or electric power may be used for any of the types of pumping equipment for surface supplies or deep well supplies. Steam equipment may be advisable for use at terminal points where it is already available, or at points where it is necessary to have steam for heating or other purposes. The direct acting steam reciprocating pumps are most generally used, although steam engine and power type reciprocating pumps may be employed.

On account of its greater economy of operation oil engine equipment is largely displacing steam equipment. The type of drive for reciprocating power pumps may be either direct connection through reducing gears or belt connection to reducing gears, the belt connection giving less noisy operation and less shock to equipment. Centrifugal type pumps are usually belt driven, and the air compressor for air lifts is usually of belt drive. Where electric power is available at reasonable cost, motor drive will usually prove economical on account of the elimination of operating attendance possible through the installation of automatic control. Belt drive through reducing gears is usually used for reciprocating power pumps and air compressors and direct connection through flexible coupling for centrifugal pumps.

Steam	*Oil Engine*	*Electric*
High first cost.	Medium first cost.	Low first cost.
High operating attendance cost.	Medium operating attendance cost.	Suitable for automatic control, no attendance.
Self-contained unit.	Self-contained unit.	Dependent on outside sources.
High maintenance costs.	Medium maintenance costs.	Low maintenance costs.
Slow in starting.	Quick starting.	Quick starting.
Heat, available for other purposes.	Heat not available.	Heat not available.
Dirty and smoke objectionable.	Noise sometimes objectionable.	Clean and noiseless in operation.
Large space and heavy foundations required.	Medium space and heavy foundations required.	Small space and light foundations.
Efficiency low, making fuel costs high.	Efficiency high and fuel cost low.	Efficiency high, but power rates usually high.

Conclusion

There is a variety of pumping equipment on the market which may be used for each kind of service. The demands of the service should be carefully considered and the individual characteristics of the particular service should be borne in mind in determining what pumping equipment is best suited from all standpoints

Committee: H. H. Richardson, M. P., chairman; R. C. Bardwell, C. & O., vice chairman; J. H. Grover, A. T. & S. F.; John Sheldon, Erie; L. C. Prunty, M. P.; C. J. McCarthy, C. M. & St. P.; Jno. W. Porter, C. N. R.; H. A. Stoner, D. & H.; J. B. Duncan, Jr., S. P.

Discussion

While emphasizing the higher cost of operations of air lift pumping equipment, as compared with deep well pumps, several men pointed out conditions under which they were warranted. R. C. Bardwell, C. & O., told of one installation on that road where it was impossible to get the necessary quantity of water from the well with other equipment, while W. T. Krausch, C. B. & Q., stated that his road had 5 such plants in service, three of which lifted water over 1,000 ft. S. J. Johnson, M. & St. L., stated that 10 electrically operated plants have been installed on that road and as a result of automatic control it has been possible to reduce the storage required and to cut the cost of operation materially.

Relative Merits of Different Kinds of Roofing Material

The qualities desired in a roofing material are: (a) dependability, it must be leak-proof for the length of time the roof is designed to last; (b) durability, the probable period of time the roof will last without renewal or heavy repairs; (c) economy, the cost, in money, of construction and probable repairs for the assumed life of the roof, although where appearance is a factor the question of cost is subordinate and should be considered only as between materials of equally satisfactory appearance; (d) appearance, except on flat roofs concealed by parapet walls; (e) adaptability. Some roofing materials may be used on any roof, while other materials are good only on flat, or nearly flat surfaces and still others are fit only for use on surfaces of steep pitch.

Asbestos-Cement Shingles—Asbestos shingles possess probably, in the highest measure, the characteristics of dependability, durability, economy and appearance. They are manufactured in a wide range of shapes and colors. Roofs of this material should have a pitch of six inches or more to the foot.

Natural Slate Shingles—Natural slate shingles are ap-

plied in the same manner as asbestos-cement shingles and perhaps where the best quality of slate can be obtained may give as good service.

Tin and Sheet Metal—Roofs of tin, if proper precautions are taken in laying and if the quality of material is the best, give long and good service. The same is true in a less degree of galvanized steel sheets. They have the advantage of adaptability to any pitch of roof but must be kept painted although there are many places that cannot be reached by paint, and in such places corrosion is likely to occur and gradually destroy the roof.

Slate Surfaced Asphalt Shingles—For the cheaper grade of buildings or on branch lines or other locations where the ornamental feature is less important, slate-surfaced asphalt shingles of the best grade obtainable are recommended. These may be either single or in strip form. Many felt shingle roofs have been in service between 15 and 20 years and are still good. Some roofs of this type have not given good service, probably because inferior or too light shingles were used. The quality of such shingles varies greatly and only the best should be used.

Wood Shingles—Because of the fire hazard, this committee cannot recommend wood shingles on any type of railroad buildings; but such material is still used and its use will probably be continued in Canada and the Pacific coast territory for frame buildings such as passenger stations, freight stations and other minor buildings. The advantage of a wood shingle roof is that it is not heavy and a simple light truss may be constructed to carry the load. A recent case has been found in Oregon, where rainfall is probably greater than in many other states, where a building having shaved cedar shingles 60 years old was dismantled. These shingles were found to be in good condition although worn extremely thin due to erosion by rain.

Roll Roofing—A much cheaper roof for temporary or semi-temporary buildings may be built of ready roll roofing of asphalt-saturated felt. Such a roof is adapted to all inclines greater than a 4-in. pitch and if given a coat of roofing cement every four or five years will last a long time, provided the felts used are of first class quality.

Tile Roofs—There is perhaps no other roofing material that contributes so much to the beauty and dignity of a structure as some form of tile. It is a permanent and comparatively expensive material and for that reason every precaution should be taken to insure maximum service.

Corrugated Iron—Corrugated galvanized iron roofing may be used, nailed direct to the purlins and, where condensation is not objectionable, is satisfactory. No. 24 gage should be the minimum used with corrugations 2½ in. between centers. The roofing can be used on any pitch greater than six inches per foot and for flatter roofs by increasing the horizontal laps.

Asbestos-Protected Metal—Asbestos-protected metal is made of flat sheet dipped in hot asphalt and covered with asbestos felt. Roofs of this material are in service and should prove to be durable and good. Where roofs of this kind are built under contract an inspector thoroughly familiar with the best practice should be constantly on the job.

Built-Up Smooth Surface Roofs—For inclines greater than 2 in. per ft. a roof built of one layer of 60 lb. per square, asphalt-saturated felt and two layers of 14 lb. asphalt-saturated felt can be used. Such a roof, built of reliable felts with alternate layers of asphalt roofing cement, is practically permanent and adapted to surfaces from those perfectly flat to inclines up to 12 in. per ft. It is of the greatest importance that the asphalt cement be procured from a reliable manufacturer, for asphalt cements are made of a combination of materials and vary all the way from worthless to first class.

Zinc—Corrugated zinc sheets have made a good record so far as information is available, but the use of zinc for this purpose has not as yet been sufficiently general to establish its relative value.

Corrugated Asbestos—In corrugated sheets asbestos makes an excellent roof for some shop buildings. It possesses many of the good qualities of corrugated iron and is not affected by rust or gases such as quickly destroy sheet iron in engine houses. All thin mineral roofings are objectionable where condensation will make trouble in cold weather.

Concrete—Except for the fact that in cold weather condensation occurs on its under surface, concrete would be the ideal roof covering for shops and engine houses. Concrete roofs are of slabs reinforced with metal, either poured or precast; and also instead of pouring, the cement, sand and water are forced by compressed air through a hose onto the previously-placed reinforcing. The poured concrete roof may also be used without felt covering by coating it with asphalt cement, but it is the usual practice to cover such roofs with a built-up roof, either smooth surface or covered with slag or gravel.

Precast Gypsum Slabs—Roofs of this material are less troubled with condensation than concrete and the felts may be nailed to them.

Plastic Gypsum—Asbestos corrugated sheets are laid on the purlins in the usual manner and over them is spread a preparation of gypsum about 2 inches thick in which a gas is developed which makes the gypsum sponge-like in texture. It is hoped that this will prove to give good insulation and it will be watched with much interest.

Committee: K. Peabody, (N. Y. C.) chaiman; L. P. Kimball, (B. & O.) vice-chairman; I. C. Crawford (D. & R. G. W.); E. P. Self (L. I.); P. Aagaard (I. C.); F. O. Condon (C. N. R.); H. I. Benjamin (S. P.), and John Harden (M. C.).

Discussion

The discussion of this report pertained largely to the merits or disadvantages of the various roofing materials on different types of roofs. While wooden shingles were not favored in general, it was evident that they are still used to a considerable extent, particularly in the West, the galvanized cut nail being preferred over the wire nail. Prepared shingles were commented upon favorably in general, although some instances of curling were reported. Slate roofs were reported as giving satisfactory service, while it was generally felt that tin roofs were not satisfactory. W. T. Krausch (C. B. & Q.) stressed the importance of the selection of materials, of the type of foundations and of the need for periodic and thorough inspections.

Methods of Repairing Disintegrated or Poor Concrete

With concrete structures the most skillful workmanship in the making of repairs is but poor compensation for delinquencies in the original construction, and it is essential to the life and utility of such units that they be built of suitable materials and in rigid conformity with approved rules of procedure. Potential sources of deterioration in the locality where the construction of a concrete unit is proposed should be carefully considered, and receive due attention in the design and construction.

The construction of a concrete unit should embody the

most approved features of design, the most judicious admixture and placement of the materials and the special measures best calculated to insure its permanency in the locality concerned, and the general policy should be pursued of adopting such proportions of the ingredients as to insure a dense mixture, or at least to avoid undue porosity.

Deterioration in concrete, with respect to its general causes and extent, and advisable remedial procedure, may be broadly classified as follows:

1. A concrete unit may be of poor quality throughout, due to inferior materials or improper methods of construction. In such cases the only practicable means of remedying the situation is complete reconstruction.
2. A concrete unit may undergo some degree of surface disintegration, occasioned by the penetration of substances from the exterior.
3. A concrete unit may be subject solely to surface disintegration. In this event, it is usually possible to effect a remedy by removing the defective concrete, placing dowels and reinforcement, and applying new concrete.
4. In some cases, where exterior disintegration is detected or apprehended, effective remedial measures may consist in the use of surface coatings, which may act—(a) mechanically, to seal the pores and voids, or (b) chemically, to make the surface water-repellent, or to neutralize the action of destructive agencies in the water or air.

Complete Reconstruction

Cases where complete reconstruction is unavoidable are relatively few and before such a step is definitely recommended or undertaken, the extent and cause of the trouble should be investigated thoroughly. In some cases, bridge piers or abutments subjected to the influence of heavy traffic display indications of low compressive strength and a disposition to break. Where a condition of this kind is found, the direction and extent of the fissures and the general condition of the unit should be ascertained. If the clevage penetrates through the interior mass, and the cohesion of the unit is impaired to a degree which renders it definitely unstable, its removal and reconstruction may be necessary. On the other hand, some defective units which, on a superficial examination, present the appearance of being vitally affected, may be so repaired as to extend the useful life indefinitely by the installation of new bridge seats, reinforced with grillages or other suitable media to effect a more symmetrical distribution of the load and a more uniform transmission through the supporting structure, to the foundations.

Where problems of this nature are presented for engineering judgment, the character of the foundation claims a prominent place in determining the procedure, and it is advisable that the underlying soil be explored diligently. Even where the foundation is found unsatisfactory, it is sometimes possible to remedy the deficiencies of nature by the application of engineering skill in the form of sheet piling, grout, etc.

Surface Deterioration

Concrete surfaces sometimes develop blemishes due to the penetration of water, either pure and exerting a solvent and erosive action, or bearing in solution chemical reagents which act upon the concrete along the lines peculiar to their several characters. Where a situation of this nature has developed, and where the deterioration is limited to the immediate surface of the concrete, a permanently effective remedy may sometimes be found in the application of suitable waterproofing protection to the affected surface. Expedients of this nature are, however, to be considered as preventative rather than remedial measures; the functon of such coatings is purely the mechanical one of preventing contact between the ground water and the concrete surface. If applied when the concrete unit is constructed, their beneficial effect is immediate. Methods of repairing surface disintegration which has not penetrated sufficiently to impair the stability or permanence of the unit as a whole constitute the most important field for study in connection with the general subject of re-conditioning concrete structures. Repair work consists substantially in the removal of the defective concrete, and the placement of new concrete which will so homogenize with the body of the unit as to restore the strength contemplated in the design.

Bonding New Concrete to Old

The question of securing a proper bond between concrete which has attained its final set and green concrete deposited thereon has engaged engineering thought for many years. It is vitally essential that the contact surface of the old concrete to which the new material is to be applied, be scrupulously clean, and also that it be saturated with water as a preliminary to the placement of the repair concrete. A further object in the application of water is to expand the old concrete to a degree which will co-ordinate it with the green mixture.

The initial step in the prosecution of repairs is the removal of the defective concrete, and the exposure of a clean surface of sound material. This should be carried to a sufficient depth to insure the detachment of all particles of disintegrated or impaired concrete, and provide a surface of clean, sound material. Reinforcement embedded in the original unit and projecting into the affected section affords a ready and convenient source of supplementary bonding strength, which should be utilized to the utmost.

In many cases, where the original unit contains no metallic reinforcement, or where such reinforcement is deficient in quantity, or, due to extreme corrosion, is totally or partially unfitted for use in the new concrete, steel dowels anchored in the old concrete may be resorted to as a means of increasing the firmness of the bond.

While the establishment of any definite formula for the proportionment of repair concrete is difficult, it is desirable that this be a fairly rich mixture, at least that undue porosity be avoided. As trouble has sometimes arisen due to cleavage resulting from the contact of two masses of concrete of differently-proportioned mixes, the relative quantities of ingredients in the old concrete should be considered, and the new concrete should not be permitted to depart so widely from that ratio as to create the possibility of future difficulty from the source mentioned.

A factor vital to the success of concrete repair work is that of securing intimate contact and firm cohesion between the old and new material. To this end, it is obviously necessary that air films or pockets between the old and new material be excluded, as far as possible, and, with this object, the throwing of the new mixture into place is recommended.

Committee: P. G. Lang, Jr. (B. & O.), chairman; R. C. Young (L. S. & I.), vice chairman; P. N. Nelson (S. P.); Leland Clapper (D. & I. R.); G. W. Welker (Sou.); E. L. Sinclair (C. M. & St. P.), and Frank Ringer (M. K. T.).

Discussion

The discussion on this report dealt to a large extent with statements by various members concerning specific failures of concrete structures on their roads and the manner in which they were repaired. The discussion also included the causes of the failure of concrete and the best methods of patching, from which it was evident that

the dove-tail or square-edge joint is preferred to the feather-edge joint. The necessity for a specific analysis of each piece of repair work and the desirability of making each repair in the light of this analysis and approved practices, was also commented on to a considerable extent.

The Framing of Bridge Timbers Before Treatment

By Earl Stimson
Chief Engineer Maintenance, Baltimore & Ohio

It is universally conceded that all timber used for structural purposes, that is exposed to conditions that produce decay, should be given preservative treatment. This includes all timbers used in bridge and trestle construction and some used in building and platform work. An adequate treatment costs considerable. To realize the maximum returns, great care must be used in protecting the timber, both before and after treatment.

Before treatment the timber should be carefully piled in a well drained storage yard in such a way that the area of contact between the pieces will be the minimum and so that there will be sufficient air space between them to permit free circulation of air. All this is to insure thorough air seasoning.

After treatment nothing should be done to the timbers that will penetrate the heavily treated outer zone and expose the lighter treated interior. To prevent this it has become a well established practice to adze and bore cross ties before treatment, and, with better reason all bridge ties and timbers should be framed, sized or cut to lengths, as the case may be, before treatment. In other words they should be pre-framed.

There is probably no more awkward and expensive operation than the framing of bridge ties and timbers in the field. It is generally done at the bridge site by the crudest methods of handling and all with hand tools and with a considerable waste in cutting. Much of the work is necessarily done in unfavorable weather.

The treating of the timbers requires that a large stock be concentrated at the plant for seasoning. Obviously then, the timbers should be framed at the plant. This gives the opportunity to centralize the framing and justifies the building of a sawing and framing mill. Such a mill, housed in a light steel frame corrugated steel-covered building, will cost about $35,000.

The writer built this type of a mill at the treating plant owned and operated by the railroad with which he is connected.

This mill was started in full operation January, 1925. The output for the year was:

Ties of uniform section	18,030 pcs.	1,442,400 F.B.M.
Bevel ties	4,059 pcs.	389,664 F.B.M.
Ties with elevation blocks	1,078 pcs.	120,736 F.B.M.
Guard rail	7,377 pcs.	472,128 F.B.M.
Trestle ties—planed	11,007 pcs.	528,336 F.B.M.
Total	41,551 pcs.	2,953,264 F.B.M.

The cost of framing the bridge ties and guard rail, including all charges, both operation and fixed, was $6.96 per thousand, as compared with $16 per thousand if done by hand. The cost of sizing the trestle ties, cutting to length and planing to thickness, was $4.77, as compared with $7 additional cost if bought sized to thickness. The saw mill was not installed until 1926, so the plant involved in the 1925 operations cost $28,940. On the basis of these unit costs the savings for the first year were $23,085 or 80 per cent of the cost of the plant. The value of the increased life of the treated timber that accrues from the pre-framing, can at best only be estimated, but the savings in comparison with hand methods in the field are subject to exact determination.

When it was proposed to frame all bridge ties and timbers at a central plant, dire results were prophesied and it was said that it could not be done. However this did not prove to be the case. Much of the framing is of timbers of standard dimensions, and requires no special information or plan for framing. For other than standard it is necessary to furnish the mill with framing plans giving in detail the dimensions. This becomes somewhat complicated on the longer deck girder spans, with the varying number of cover plates, and when on a curve it becomes still more interesting. The framing plans for renewing existing decks are made up on the divisions from measurements taken in the field. For new bridges and for the more complicated renewals, special framing plans are made up by the bridge engineer. When there are ties of several different framings on a bridge, the ties are numbered on the plan, which numbers are stamped on the ends of the corresponding ties for identification in placing on the bridge. It is remarkable how few misfits are found and these are more often found to be the result of mistakes in the framing plans, rather than mistakes made in the mill.

Discussion

This paper aroused active discussion. A number of members described newly-adopted plans for framing timber prior to treatment, including the Central Railroad of New Jersey and the New York, New Haven and Hartford. It was evident from the discussion that it is not necessary to frame timbers for rivet heads as they seat themselves with the passage of the first locomotive.

The Application of Protective Coatings to Structural Steel

[A large part of the report on protective coatings dealt with the application of paint by the spray process. This portion of the report is abstracted below.]

Today, and during the past few years, the big development in the application of protective coatings has been the paint spray machine and to get as much information on the subject as was possible a questionnaire was prepared and sent to officers of 97 railroads, covering protective coatings, under the heads of paints, bituminous coatings, concrete and cement coatings, and special coatings or coverings.

Answers to this questionnaire were received from 49 railroads in this country and Canada, and 2 in foreign countries, with a total mileage of approximately 164,300 miles.

The first five items of the questionnaire had to do with the use of the spray.

To question No. 1—"How is paint applied (brush or spray?" 31 replies stated "brush only" and 18 answered "both"; although 11 of those who still use the brush only, are contemplating the immediate use of the spray, or are experimenting with it.

To question No. 2—"If you spray paint, what kind of machine do you use?" 7 replied that their machines were homemade and the remaining 11, who use, and the 11 contemplating the use of a spray, employ machines made by 7 or 8 different manufacturers.

To question No. 3—"Is the compressor used exclusively for painting or is it diverted to other uses?" 5 replied that air is obtained from compressed air lines around shops; 16 do or would divert it to other uses, and one uses it for sand blasting.

To question No. 4—"In spray painting is the operator protected from breathing the spray?" the answers were as follows: yes, 12; no, 7; uncertain, 3; depends, 1; no answer, 6.

To question No. 5—"Do you consider spray as good as brush paint? If not, state why?" the answers were as follows from those using the spray, intending to use it or experimenting with it: no, 6; yes, 15; can't say, 4; non-committal, 1; and not answered, 13.

The answers received show a definite trend towards the use of the spray in applying paint to structural steel for practically half of those answering are using or intending to use this method of application. As a matter of fact some of the larger railroads are just beginning seriously to consider the use of compressed air.

Following are the comments made against spray painting:—Some paint is wasted, particularly in the wind and when painting light truss bridges. The coat is applied unevenly. Edges of plates and angles are not properly covered and must be gone over with a brush. The film is porous. There is an added expense in moving equipment. The surface is built up of a series of drops superimposed on each other with spaces between through which moisture can penetrate and attack the steel.

Comments made in favor of the spray range from an enthusiastic "far superior" to a more conservative "spray does good work," "it is more rapid," "it reaches inaccessible places," "it is better on large surfaces." Digesting all of the replies received and from conversations with paint men and spray manufacturers we can come to some conclusions as to the merits and defects of spray painting.

Conclusions

The great advantage of the spray is the rapidity of applying the paint, which can be put on two to four times faster than with the brush. However, applying the paint to the surface to be protected and spreading it out is only a part of a general job of painting. The surfaces to be painted have to be cleaned and scaffolding of practically the same strength has to be erected for either method and then taken down again. There is also the cost of the paint itself which, taking everything into consideration, is without doubt more expensive with the spray than the brush method of application on account of waste. The real saving is not then so apparent and can be realized only on structures favorable for spray painting.

Paint sprayed on will reach parts inaccessible or difficult to reach with a brush and this is one real advantage. A coat of spray paint properly applied will cover a surface more evenly than that put on with a brush. This is especially noticeable around rivet heads. Under ordinary brush painting there is usually a surplus of paint on one side and a thin film on the other side. The film is of unequal strength and also does not adhere firmly at the juncture of rivet head to plate. The film breaks and corrosion starts. With the spray the film is driven close to the metal all around and is equally distributed so that no air pocket is formed and the film is of equal strength all over. When a paint program is unusually large, the use of the spray machine will hasten the work and enable the painting gangs to complete the work during the most favorable part of the painting season.

Assuming that the spray gun can apply coatings of paint that will give the same satisfactory service as those applied with a brush, it feels that a good spray outfit ought to be a regular part of a paint crew's equipment. It will be found useful for applying paint on inaccessible places. In some places the brush can supplement the spray, while in other places the spray can supplement the brush.

Committee: R. W. Johnson, chairman (C. M. & St. P.): H. H. Harmon, vice-chairman (B. & L. E.); H. B. Stuart (G. T.); Martin Kane (D. & H.); J. D. Voorheis (Wabash); and J. P. Smallenberger (Erie).

Discussion

The discussion of this report brought out a marked difference of opinion regarding the merit of contracting painting work with most of those present opposed to this practice on account of the difficulty of insuring proper workmanship, even with competent inspectors. Several members who reported satisfactory results from contract work stated that this was done by small local contractors.

The Use of Creosoted Timber

Any timber that has the structural requirements for the use intended can be creosoted. This opens a big field for the utilization of many species of timbers not otherwise suitable on account of their short life. Also, when timber is to be creosoted, it is not necessary to confine specifications to heartwood. The sapwood, before decay, is structurally as strong as the heartwood and takes the creosote oil much better, so that it is an advantage to utilize that part of the timber instead of wasting it. The timber should be selected for its suitability for the purposes intended and then creosoted for the prevention of decay.

The committee concluded, after studying this subject, (1) that timber should be creosoted when it is to be used in exposed places. (2) Creosoted timber is generally more economical than untreated timber and in many cases can be used more economically than concrete and steel. (3) The use of creosoted timber tends to conserve our timber resources, by decreasing the amount of timber required for replacement and by utilizing grades and species of timber that are not suitable for use when untreated. (4) The fire hazard of creosoted timber is somewhat less than for untreated timber. (5) The strength of creosoted timber is not reduced when properly treated and the same working stresses can be used for design as for untreated timber. (6) Timber that is to be creosoted should, when possible, be framed completely before treatment. If creosoted timber is cut or scarred, then precautions for protecting the surfaces must be followed rigidly by coating the cut or scarred places with several coats of creosote oil, applied hot.

Committee: C. S. Heritage, K. C. S., chairman; W. A. Clark, D. & I. R. R.; D. T. Rintoul, S. P.; J. E. Coffin, Sou.; I. L. Simmons, C. R. I. & P.; A. J. James, A. T. & S. F.

Discussion

On raising the question of the advisability of placing a creosoted bridge deck or untreated white oak piles, A. I. Gauthier (B. & M.) brought forth an extended discussion which reflected a very adverse opinion regarding this practice, many instances being cited where such construction necessitated the replacement of the piling long in advance of the deck. That creosoted material is recommended for wooden bridges and trestles was the general consensus of opinion, although the importance of protecting the exposed portions of creosoted piling was stressed. H. I. Benjamin (So. Pac.) told of the favorable results obtained on his road in the use of creosoted piles in sea water, where they have proved more resistant to the attack of marine borers than untreated piling and give from four to five times as long a life.

The Use of Compressed Air in Bridge and Building Work

Compressed air has been used with increasing effectiveness by bridge and building workers for 30 years or more. Each year finds some new uses.

Steel bridge erection has always suggested the use of riveting hammers. This tool operates best at 80 to 90 lb. pressure. In steel bridge work there is often drilling and reaming to do. Although the acetylene burner may compare with the pneumatic drill for speed in making the holes in steel, the air drill gives a smoother and more accurate hole for either bolting or riveting.

Especially in the repair of steel bridges, air chipping hammers are the quickest and cheapest means of cutting out old rivets and steel to make way for new parts. In the erection of steel tanks, a calking tool for the hammer gives an economical means of making tight joints.

In timber bridge work the air drilling machine facilitates the framing. Attachments for this tool will operate to tighten lag screws and screw spikes. Drills and wood borers use 80 to 90 lb., pressure and consume slightly more air than the hammers.

Compressed air operates several tools that are handy and economical in foundation work. Jack hammers and tripod drills are faster and cheaper than hand drills for making holes in ledge rock or boulders for blasting.

In tearing out old masonry and concrete structures, air drills more than justify their cost if the job is large. This tool is generally called a paving buster. Compared with hand methods, the saving is over 70 per cent. These tools operate on 60 to 70 lb., pressure. The sharp steel in the jack hammer is also used to advantage in picking frozen ground.

In foundation work, at least two other convenient uses of compressed air are found. Attachments to the heavier jack hammer for driving sheet piling do a quick job with less damage to the piles while an air operated pump will remove water cheaply.

There are a number of convenient attachments to the hammer for various types of construction work. One of the recent developments is a spade that eliminates hand picking in trenching work. Another is the back-fill tamper. A rather sharp edged tool designed for cutting asphalt is convenient in cutting out mastic waterproofing in bridge replacement.

Similar to the compressed air drills are rotating devices operating wire brushes for cleaning steel bridges for painting. Carborundum wheels on the same tool are convenient and economical in grinding down steel plates for a tight fit.

Compressed air has one of its most important uses in the sand blast for cleaning steel work ready for painting. The sand blast is also used to advantage in cleaning the surface of buildings.

When compressed air is available on a job, loads up to 1,000 lb., may be lifted with a small air turbine hoist. Such a hoist can also be used to draw culvert pipe into place.

Similar to spray painting is the application of waterproofing to the back of walls and the top of slab bridges by compressed air. The force behind this spray gets the waterproofing into the pores of the concrete. Air pressure of 75 lb., is necessary for good work. The waterproofing should be heated to 100 deg. F. to get a better flow through the spray gun.

Compressed air is quite commonly used in raising the water from wells to pipe lines or tanks. Similarly, it will lift the water from coal and ash hoist pits, the sumps of which may be below the level of sewers in the vicinity. This is possible around terminals where air pressure is maintained in lines.

In recent years compressed air has come to be the means of operating some of the most useful labor saving devices of the bridge and building department. The tools operated are of three general types, piston, revolving and spray or blast. The piston type, in its various forms gives the rivet hammer, chipping, cutting and calking tool, tampers, stone drills and chippers, and demolition tools. The rotating type of tool operates drills, reamers, wood borers, screw tighteners, brush cleaners and grinding tools. The jet type handles sand blast cleaning, cement gun work, and spray painting. For most operations the saving is over 50 per cent compared with hand methods.

It is recommended that bridge and building gangs be provided with portable compressors supplied with hammer and drilling tools having the various attachments useful to the type of gang considered. These tools will enable a small gang to perform more than the larger one of a few years ago at a saving large enough to more than justify the cost of the labor saving devices.

Committee: F. A. Dever, chairman, division engineer, Pennsylvania; William Shively, master of bridges, Central Railroad of New Jersey; G. E. Bitz, supervisor of bridges, New York Central; Albert Fink, general foreman bridges and buildings, Delaware, Lackawanna & Western; Adolph Yappen, assistant engineer, Chicago, Milwaukee & St. Paul; J. W. Holcomb, supervisor bridges and buildings, Lehigh Valley; A. B. Scowden, assistant engineer bridges, Baltimore & Ohio; and F. H. Lehrman, bridge draftsman, Chicago & North Western.

Supply Men Hold Largest Exhibit

Exceeding all previous records, sixty members of the Bridge and Building Supply Men's Association, manufacturers of material and equipment used in the construction and maintenance of bridges, buildings and water stations, presented exhibits of their products in the lobby of the hotel. This was a larger number of firms than represented at any previous convention of the association, exceeding the peak year of 1925, by 10. For the most part the exhibit consisted of literature, models and samples; however there was an increasingly

large number of actual materials and devices on display.

The officers of the association during the past year were as follows: President, D. J. Higgins, American Valve & Meter Co., Chicago; vice-president, John E. Nelson, Joseph E. Nelson & Sons, Chicago; treasurer, B. J. Wilson, The Pocket List of Railroad Officials, Chicago; secretary, F. M. Condit, Fairbanks, Morse & Co., Chicago; honorary director, A. J. Filkins, Paul Dickinson, Inc., Chicago; members executive committee: W. D. Waugh, Detroit Graphite Company, St. Louis, Mo.; J. W. Shoop, Lehon Company, Chicago; D. A. Hultgren, Massey Concrete Products Corporation, Chicago; O. T. Snow, T. W. Snow Construction Company, Chicago; R. F. Repasz, Wm. Robertson & Co., Chicago, and D. A. Evans, Kaustine Co., Inc., Buffalo, N. Y.

The companies which presented exhibits, together with the character of their exhibits and the names of their representatives follow:

List of Exhibitors

American Hoist & Derrick Company, St. Paul, Minn.

American Tar Products Company, Pittsburgh, Pa.; literature; D. S. Snow and J. H. Montgomery.

American Railway Hydrant & Valve Company, Stapleton, S. I., N. Y.; valves; W. Volkhardt.

American Valve and Meter Company, Cincinnati, Ohio; model of Poage water column with telescopic spout; J. T. McGarry, D. J. Higgins and Cecil Stevens.

Barber Asphalt Company, Philadelphia, Pa.

Barrett Company, New York; literature; F. S. Nicols.

Beaver Products Company, Inc., Chicago; roofing, wallboard, plaster; H. M. Butters.

Binks Spray Equipment Company, Chicago; paint spraying equipment; O. D. Soellner, J. A. George.

Buda Company, Harvey, Ill.

Carter Bloxonend Flooring Company, Kansas City, Mo.; samples of built-up wood block flooring, literature and photographs; A. E. Giese and A. N. Dobson.

Celotex Company, Chicago.

Chicago Bridge & Iron Works, Chicago; photographs and literature; E. P. Shelton.

Cleveland Pneumatic Tool Company, Cleveland, Ohio; hammers, riveters, wood and metal boring drills, rock drills and concrete breakers, air valves and hose couplings; B. H. Tripp.

Cook, Inc., A. D., Lawrenceburg, Ind.; deep well equipment; Chas. F. Cole, J. F. Freeman, J. Q. Peeples and W. C. Gentry.

Dearborn Chemical Company, Chicago; samples of No-Ox-id; W. D. Bennett and F. H. Robison.

Detroit Graphite Company, St. Louis, Mo.; literature; W. D. Waugh, A. B. Edge and J. R. C. Hintz.

Detroit Steel Products Company, Detroit, Mich.

Dickinson, Paul, Inc., Chicago; models of cast iron camp car jack, ventilators and chimneys for small buildings; A. J. Filkins and A. E. Engman.

Dixon Crucible Company, Joseph, Jersey City, N. J.; graphite products; H. A. Nealley and W. A. Housten.

Duff Manufacturing Company, New York; jacks; P. G. O'Hara, J. E. Stewart and W. G. Robb.

Dunham Company, C. A., Chicago; radiator traps, float traps, strainers, radiator valves, medium pressure traps and lift fittings; L. W. Millar.

Fairbanks, Morse & Co., Chicago; literature; F. M. Condit, M. J. Coverdale, H. E. Vogel, B. S. Spaulding and H. L. Hilleary.

Fairmont Railway Motors, Inc., Fairmont, Minn.; motor car engine; E. R. Mason, S. D. Gibson and C. F. Green.

Federal Engineering Company, Chicago; John E. Nelson.

Hastings Signal & Equipment Company, Boston, Mass.; automatic tell-tale hanger and replacer and side clearances; Harry H. Nayor and Joseph E. Freeling.

High Grade Manufacturing Company, The, Cleveland, Ohio; literature and samples of roofing cement; J. N. Kinn and S. A. Baber.

Ingersoll-Rand Company, New York; literature on pneumatic bridge repair outfits; W. H. Armstrong and F. F. Hanly.

Insulite Company, The, Chicago; E. H. Batchelder.

Jenkins Brothers, New York; valves, gage glasses, car heating gaskets, sheet packing and discs; C. B. Yardley and W. J. Adams, Jr.

Jennison-Wright Company, Toledo, Ohio; creosoted wood blocks; G. E. Humphrey.

Johns-Manville, Inc., New York; samples of roofing, pipe and boiler insulations, packing shingles, corrugated siding and roofing, waterproofing and industrial flooring and smoke jacks; W. H. Lawrence, W. R. Bush, P. C. Jacobs, A. F. Eichhorn and F. J. Horne.

Jones Paint Company, The, Rome, N. Y.; roofing cement, glazing cement, literature; A. DeWolfe Jones.

Jordan Company, O. F., East Chicago, Ind.; A. L. Greenabaum.

Kaustine Company, Inc., Buffalo, N. Y.

Kentucky Rock Asphalt Company, Louisville, Ky.; samples of rock asphalt, photographs and literature; W. F. Pollard.

Knickerbocker Roofing & Paving Company, Chicago.

Lehon Company, The, Chicago; samples of roofing and shingles, waterproofing and roof coatings; Tom Lehon, J. W. Shoop, E. T. Wade and F. T. Carpenter.

Lewis Asphalt Engineering Corporation, New York; samples of waterproofing and literature; W. T. Kelley and P. R. Frank.

Lowe Brothers Company, The, Dayton, Ohio; Langley Ingraham.

Massey Concrete Products Corporation, Chicago; photographs and literature; W. Lyle McDaniel, Charles Gilman, J. A. Higgs, Jr., and David A. Hultgren.

Murdock Manufacturing & Supply Company, The, Cincinnati, Ohio; hydrants, railway water service box and drinking fountains; J. C. Endebrock.

National Lead Company, New York; girder bridge model showing paint coats; literature; F. M. Hartley, Jr., A. H. Sabin, C. L. Hass, W. S. Carlisle, D. Lewis Ireton, F. E. Dodge.

Nelson & Sons, Joseph E., Chicago; literature, photographs; John E. Nelson and I. B. Tanner.

Norton, A. O., Inc., Chicago; bridge jacks; W. R. Kelly and O. L. Wright.

Northwestern Motor Company, Eau Claire, Wis.; motor car engine parts, heavy duty transmission; photographs and literature; B. F. Frazier.

Patterson Company, W. W., Pittsburgh, Pa.; tackle blocks; W. W. Patterson, Jr.

Patterson-Sargent Company, Cleveland, Ohio; W. H. McBride, H. V. McKedy and W. W. Huntley.

Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.; literature; I. A. Bickelhaupt.

Pocket List of Railroad Officials, New York; publications; B. J. Wilson.

Railroad Water & Coal Handling Company, Chicago.

Robertson Company, H. H., Pittsburgh, Pa.; samples of protected metal

Insulite Company, The, Chicago; E. H. Batchelder.

Gray and J. R. Sexton.

Robertson & Co., William, Chicago; cinder conveyor literature; William Robertson and R. F. Repasz.

Ruberoid Company, New York; Wm. S. Knoble.

Sherwin-Williams Company, Cleveland, Ohio; J. Schlintz.

Simmons-Boardman Publishing Company, Chicago; copies of the *Railway Age, Railway Engineering and Maintenance,* and *Railway Engineering and Maintenance Cyclopedia;* E. T. Howson, N. D. Howard and F. C. Kush.

Snow Construction Company, T. W., Chicago; literature; O. T. Snow and B. S. Snow.

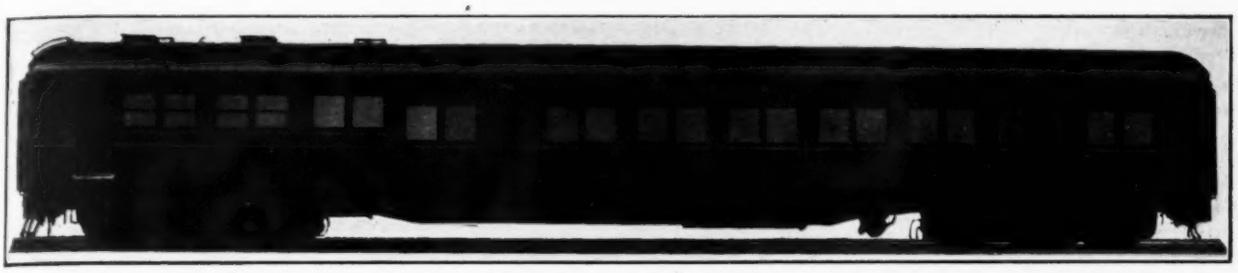
Templeton, Kenly & Co., Ltd., Chicago, bridge jacks; literature; G. L. Mayer.

U. S. Wind Engine & Pump Company, Batavia, Ill.; literature; C. E. Ward.

Zitterell Company, W. J., Webster City, Iowa; photographs; Guy C. Mills.

At the annual meeting held on Thursday morning the following officers were selected for the ensuing year: President, John E. Nelson, Joseph E. Nelson & Sons, Chicago; vice-president, B. J. Wilson, The Pocket List of Railroad Officials, Chicago; treasurer, F. M. Condit, Fairbanks, Morse & Co., Chicago; secretary, D. A. Hultgren, Massey Concrete Products Corporation, Chicago; directors, for the year ending 1927, O. T. Snow, T. W. Snow Construction Company, Chicago; and W. D. Waugh, Detroit Graphite Company, St. Louis, Mo.; directors for two years ending 1928, R. F. Repasz, William Robertson & Company, Chicago, and D. A. Evans, Kaustine Company, Reading, Pa.; directors for three years ending 1929, G. C. Mills, W. J. Zitterell Company, Webster City, Iowa, and P. C. Jacobs, Johns-Manville Company, Chicago.

President Atterbury Greeting Some of the P. R. R. Athletes Who Took Part in the System Meet, Sesqui Stadium, Philadelphia, September 18



One of the New Dining Cars Recently Placed in Service by the New York, New Haven & Hartford Between Boston, Mass., and New York

New Haven Buys Six Dining Cars

To be used on Merchants and Knickerbocker limited trains between Boston and New York—Seating capacity of 42 persons

THE New York, New Haven & Hartford recently received six all-steel dining cars of the non-vestibule type from the Pullman Car & Manufacturing Company, Chicago. These cars are of the Pullman wide clear-story design and were ordered expressly for

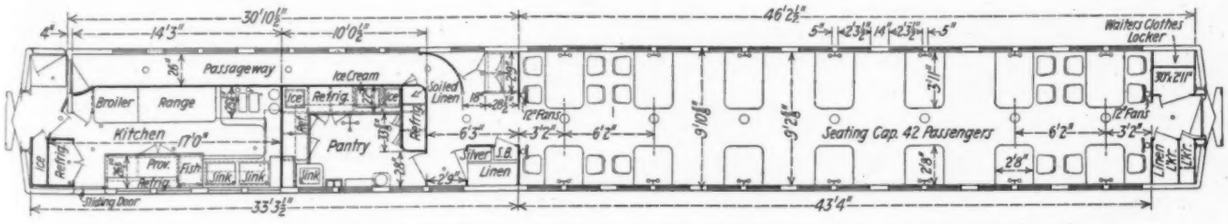
The Tables are Located So that the Guests Have an Unobstructed View Through the Windows

assignment on two of the New Haven's crack trains, namely the Merchants Limited and the Knickerbocker Limited, which run between Boston, Mass., and New York City. The length over the buffers of these cars is 82 ft. 11 in. with a length over the end sills of 74 ft. The inside width between posts is 9 ft. 1 in.

The dining room has a length of 43 ft. 4 in. and seats 42 persons. Referring to the floor plan of the car, it will be noted that the windows are constructed with alternate wide and narrow posts, 14 in. and 5 in. in width respectively, the distance between window posts being 2 ft. 3½ in. Each table is centered on the 5-in. window post which places the person sitting at a table directly opposite a window. This arrangement, which provides an unobstructed view for the diners, is the result of a careful study made to determine the proper number of seats to be provided with the utmost comfort for the passengers. In making this study, the designers considered the possibilities of providing seats either for 36 people or for 48. It was found, however, that the best combination, with due regard for maximum capacity and sufficient space for convenience in handling patrons, was the arrangement which provides seats for 42 people.

The attractiveness of the dining room is accentuated by the simplicity of decoration, special pains being taken to avoid any appearance of elaborate design or finish. The headlining is painted in old ivory color and the side wall panels are painted in cream color with light green striping, the blending of which produces a pleasing and harmonious effect. The pantry and kitchen are painted with ivory Vitrolite, providing an attractive finish which is also easily kept clean.

The lighting arrangement consists of center light fixtures with large frosted bowls hanging from the ceiling, together with a two-light fixture located on the 5-in. window post over the center of the tables. Bracket lamps were used instead of the usual table lamps so as to allow as much room as possible on the table. Located



Floor Plan of the Dining Cars Built for the New York, New Haven & Hartford by Pullman

between the ceiling light fixtures are electric fans with revolving louvres which produce desirable ventilation but at the same time avoid a direct draft on the passengers.

The buffet is located in the passageway between the dining room and the pantry, to permit the steward to discharge his duties at this location without interfering with guests passing in or out of the dining room. A silver and clean linen locker equipped with a roller type door, is located opposite the buffet. Below these two lockers is a locker for soiled linen which is provided with a self-closing type door. The silverware and dishes are designed exclusively for use on this group of six diners.

The pantry has been designed to meet demands of convenience and to obtain the largest possible storage space. All the refrigerators are of Bohn manufacture and are iced from the inside. The counters in the pantry, as well as in the kitchen, are covered with Monel metal and

Interior View of the Pantry, Looking Over the Counter into the Kitchen

have the corners rounded. The length of the pantry is 10 ft. and the length of the kitchen 14 ft. 5½ in. The range and broilers as well as the kitchen itself, are of the latest design and are equipped with exhaust fans of ample capacity. This system of ventilation prevents odors from the cooking reaching the dining room and also adds to the comfort of the crew.

Two large tanks for cold water are located in the pantry, while two tanks for hot water are located in the kitchen. Both the hot water tanks are provided with sight gages for ascertaining the level of the water. A separate tank for heating water by steam from the train line is also installed in the kitchen, thus providing a hot water supply independent of the range. The ice and food lockers are of sanitary construction, the meat lockers being equipped with heavy wire mesh shelves supported on rollers. This arrangement permits a shelf to be drawn from the locker without interferring with the other shelves.

The trucks are of Commonwealth cast steel construction with 5-in. by 9-in. journals and are secured to the car body bolster with a Miner safety locking center pin. They have a wheel base of 11 ft., the distance between car bolster centers being 58 ft. All six cars are equipped with cast steel side operating single stem couplers with 5-in. by 5-in. shanks and quadruple shear yokes and Miner friction draft gears and buffers. The weight of each car is 162,300 lb.

Storage Battery Locomotive With Gas-Electric Auxiliary

THE Chicago & North Western is now using a storage battery locomotive weighing 110 tons and capable of hauling a 1500-ton train, equivalent to 70 empty or 30 loaded freight cars, at a speed of from eight to 10 miles an hour. This unit has many of the advantages of the usual electric locomotive without requiring an overhead trolley or third rail for its source of power. It will be used for some time in the freight yards of the Chicago & North Western to demonstrate its possibilities in solving some of the problems of railroad terminal electrification in that city. The locomotive, incorporating features of both the storage battery and the gas-electric drive, has a number of novel features which make it particularly adaptable to switching service. The control is so arranged that power can be taken entirely from the storage battery, or the gas-electric drive can be used. If more power is needed than is being supplied by the gas-electric unit, the storage battery supplies energy in parallel with the engine-driven set; if the gas-electric unit is supplying more power than is required by the motors, the excess automatically charges the storage battery. In switching service, the battery can thus be used to supply power, with the gas-electric unit used during slack periods to keep the battery charged. The storage battery can also be recharged by outside power.

It is intended to use the storage battery as the source of power for the traction motors under ordinary circumstances. The proportions of these batteries have been selected so that under ordinary conditions of switching operation the battery will furnish sufficient electric power to handle the locomotive for one day's service without recharging. The entire space in the two sloping auxiliary end cabs is devoted to this battery equipment. The battery is made up of 120 cells, type FL-31, Exide Iron Clad, with a capacity of 616 kw. These storage batteries can for short periods deliver 1,000 hp. to the driving motors.

The auxiliary gas engine generating set, provided for recharging the batteries, permits the locomotive to be kept in continuous service and operated, if necessary, on tracks remote from the regular charging facilities. Under ordinary switching service in Chicago, the battery will be charged at night, or at other times when the locomotive is idle from special equipment installed by the Commonwealth Edison Company in the freight yards.

The gasoline engine set is known as the Winton model 106-A power plant. The engine is a six-cylinder, 1000-r.p.m. unit with 7¼ in. by 8 in. cylinders. The generator, built by the General Electric Company, is a type DT-508-A shunt-wound machine designed to supply 230 volts. A radiator of the fin tube type is mounted on the roof of the central cab, and forced ventilation is provided by two motor-driven fans. A pump, driven directly by the engine, circulates the cooling water; for protecting the cooling system against freezing when the

engine is idle in winter a small coal-fired heater is provided. Suitable valves and piping connections are supplied for passing the hot water through radiators located at each control station, thus providing heat for the cab during cold weather. A 150-gallon fuel tank is suspended underneath the platform. The gasoline feed to the carburetor is effected by a magnetically operated diaphragm pump.

Each of the four axles of the locomotive carries a GE-287 motor driving through a single reduction gear. The gear reduction is 66/16. The motors are of the longitudinally ventilated construction, and provision is made for forced ventilation. The control is of the PCL single-unit double-end type, providing nine resistance points, one free running point and one reduced-field point with the motors in series parallel. With a full multiple grouping of the motors, there are seven resistance points, one free running point, and one reduced field point. A reversal of operation is obtained by an electro-magnetic switch which reverses the motor fields.

The battery is divided into two sections, connected in series during locomotive operation and when charging from the gas engine side on the locomotive. A manually operated series-parallel switch provides connections for charging the battery from an external source with the two sections connected in parallel. Suitable interlocks insure against the possibility of improper operations. An ampere-hour meter automatically opens up the charging circuits when the battery is fully charged, and shuts down the gas engine if the charging current is being taken from the auxiliary side.

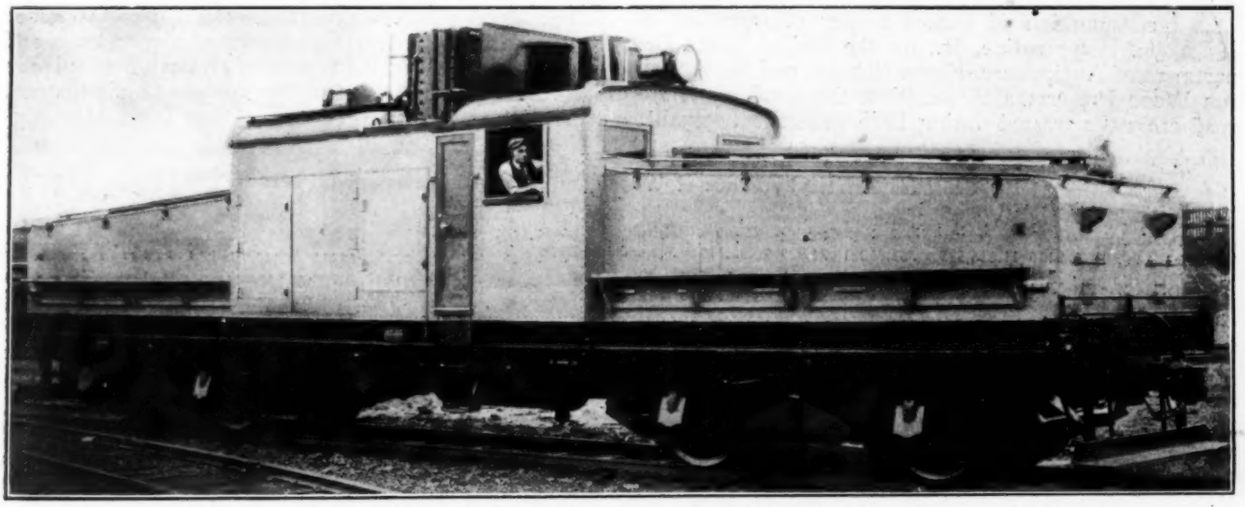
Separate watt-hour meters measure the power consumed by the locomotive, the input from the generator, and the input from any external charging circuit. Ammeters are also provided for indicating the motor and generator current. Type No. 14EL straight and automatic air brake equipment is provided, the air being furnished by a CP-26, 100 cubic foot compressor.

The locomotive is of the steeple-cab type, with two swivel motor trucks. The platform is built up of structural steel having channel side sills and I-beam center sills. The couplers carried at each end of this platform are A.R.A. friction draft gear with 5 in. by 7 in. shank. The trucks are rigid bolster, equalized type with side frames of rolled steel plate.

The cab is made up of a central section containing the two control stations, contactors, resistors, relays and other auxiliary control equipment and the gas-engine generator set and air compressor.

The table lists the principal weights, dimensions and other data for this locomotive:

Weights	
Locomotive complete	237,000 lb.
Mechanical equipment	100,700 lb.
Battery	78,960 lb.
Motor	29,800 lb.
Engine and generator	7,850 lb.
Radiator and fan	3,500 lb.
Control	9,150 lb.
Brakes	5,640 lb.
Heater	1,400 lb.
Dimensions	
Length overall	52 ft. 0 in.
Wheel base	39 ft. 0 in.
Rigid wheel base	8 ft. 0 in.
Height	14 ft. 8 in.
Width	10 ft. 0 in.
Tractive effort, one hour capacity	17,200 lb.
Speed at one hour rating	9½ m.p.h.
Tractive effort, 30 per cent coefficient of adhesion	66,000 lb.
Maximum speed	30 m.p.h.
Time motors will carry max. tractive effort	9 minutes



The Locomotive is now in Switching Service in the Chicago Freight Yards of the Chicago & North Western

Derailment at Drivers, Illinois

W. P. BORLAND, chief of the bureau of safety, has reported to the Interstate Commerce Commission on the derailment of a freight train on the Louisville & Nashville at Drivers, Ill., on August 12, wherein both the engineman and the fireman of the train were killed. This derailment was somewhat peculiar in that a torrential rain, interfering with the vision of all hands, was an element in the cause; while ignorance or incompetence on the part of a flagman, irregular practices in conferring with the train dispatcher and an inadequate flagging rule figured conspicuously.

This report, condensed, shows the following facts:

Northbound freight train No. 60, consisting of a locomotive, 24 cars and a caboose, was derailed where track repairs were in progress (one rail out) and the engine was overturned. Thirteen cars were scattered to the right or left of the track. The engineman and fireman were killed and one employee was injured. Responsibility is placed on the flagman who had been sent out by the track foreman. When the engineman ran past his stationary yellow and red signals, this flagman made no proper effort to attract the runner's attention. The flagman placed a yellow tin flag about one mile back, and a

red cloth flag at a less distance, but the torpedo which he used had had its clamps broken off and it was found afterward on the ground, not exploded. The engineman did not shut off steam and how he came to be oblivious to the signals can only be conjectured. He had sounded the whistle twice within the last three miles.

Rain was falling in such torrents that vision was somewhat obstructed and the front brakeman, who was riding in a box car next behind the locomotive, said that he was unable to see as far as the caboose when standing in the side doorway of his car. The section foreman said that he did not hear the whistle of the approaching train, and he believed that the noise caused by cutting a rail prevented the sound of the whistle from reaching him.

The flagging rules do not provide for the use, by trackmen, of hand flags or fusees, a feature which is criticized by the inspector, who says that the rule should be as full and detailed as the rule for train flagmen. A fusee might have attracted this runner's attention. The trackmen's rule also says that in cases like this the man is to be provided with tools so that, while remaining near the stop flag, he can work on the track. The inspector says that a flagman should be required to give his whole attention to flagging duty. On the day before this accident the train dispatcher had been notified that extensive laying of new rails was to be carried out at this place, but on this day, there being but little work to do, no notice was given to him.

Fewer Ties Treated in 1925

ACCORDING to statistics on the production and consumption of treated timber prepared by R. K. Helphenstine, Jr., for the United States Department of Agriculture, Forest Service, and the American Wood Preservers' Association, the number of railroad cross ties treated during 1925 was slightly smaller than in the preceding year, the totals for the two years being 62,562,911 in 1925 and 62,632,710 in 1924. There was, however, a material increase in the total volume of all wood subjected to treatment during 1925 as compared with 1924, the decrease in the case of ties and one or two other classes of timbers being much more than offset by substantial increases in the volume of construction timber, poles and cross arms treated during the year. The total for all items in 1925 was 274,474,538 cu. ft. as compared with 268,583,235 cu. ft. in 1924.

The largest increase occurred in poles, 42,204,413 cu. ft. being treated in 1925, or an increase of 5,487,745 cu. ft. as compared with 1924. In the case of construction timbers, 27,992,452 cu. ft. were treated in 1925, an increase of 3,701,221 cu. ft. over 1924. The treatment of cross arms in 1925 totalled 621,705 cu. ft. or 103,894 cu. ft. more than the total in 1924. In addition to the minor reduction in the case of cross ties, there was a reduction of 2,049,009 cu. ft. in the case of piles, 783,071 cu. ft. in the case of wooden blocks, and 362,980 cu. ft. for miscellaneous materials.

Statistics on the consumption of preservatives for 1925 confirm the prevailing tendency toward a greater use of creosote and a decreasing use of zinc chloride and miscellaneous preservatives. A total of 167,642,790 gal. of creosote was used in 1925, or an increase of 10,337,432 gal. over 1924, while the consumption of zinc chloride in 1925 was 26,378,658 lb., or a decrease of 6,830,017 lb. as compared with the previous year. Miscellaneous preservatives totalled only 331,591 gal. in 1925, while paving oil was used to the total of 2,080,287 gal. The use of petroleum oil as an admixture in treatment amounted to 13,048,539 gal., or an increase of 1,869,193 gal. over the total in 1924.

The wood preservation statistics for 1925, as issued by the United States Department of Agriculture and the American Wood Preservers' Association, give a record for the first time of the volume of car material treated, namely, 48,380 ft. b.m. Other items of miscellaneous material treated include 2,104,500 ft. b.m. of fence posts, 1,317,811 ft. b.m. of tie plugs and 855,000 ft. b.m. of crossing planks.

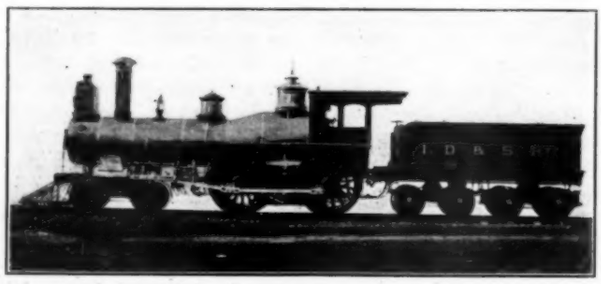
Wood Preservation, 1909-1925, Together with Consumption of Creosote and Zinc Chloride

Year	Total material treated, cu. ft.	Number of cross ties treated	Creosote used, gal.	Zinc chloride used, lbs.
1909.....	75,946,419	20,693,012	51,426,212	16,215,107
1910.....	100,074,144	26,155,677	63,266,271	16,802,532
1911.....	111,524,563	28,394,140	73,027,335	16,359,797
1912.....	125,931,056	32,394,336	83,666,490	20,751,711
1913.....	153,613,888	40,260,416	108,378,359	26,466,803
1914.....	159,582,639	43,846,987	79,334,606	27,212,259
1915.....	140,858,963	37,085,585	80,859,442	33,269,604
1916.....	150,522,982	37,469,368	90,404,749	26,746,577
1917.....	137,338,586	33,459,470	75,541,737	26,444,689
1918.....	122,612,890	30,609,209	52,776,386	31,101,111
1919.....	146,060,994	37,567,927	65,556,247	43,483,134
1920.....	173,309,505	44,987,532	68,757,508	49,717,929
1921.....	201,643,228	55,383,515	76,513,279	51,375,360
1922.....	166,620,347	41,316,474	86,321,389	29,868,639
1923.....	224,375,468	53,610,175	127,417,305	28,830,817
1924.....	268,583,235	62,632,710	157,305,358	33,208,675
1925.....	274,474,538	62,563,911	167,642,790	26,378,658

Crossties Treated by Kinds of Woods and Kinds of Preservatives, 1925

Preservatives	Oak	Yellow pine	Douglas fir	Beech	Gum	Birch	Tamarack	Western yellow pine	Maple	Hemlock	Lodgepole pine	Elm	All other	Total
Creosote*.....	18,200,116	11,825,575	361,812	1,671,939	2,002,320	349,620	22,326	.....	765,934	.....	.....	.....	622,328	35,821,970
Creosote-petroleum†.....	1,064,011	2,631,372	2,354,965	178,427	839,664	1,004,536	496,823	295,159	137,156	15,090	157,908	7,638	46,850	9,229,599
Zinc-creosote‡..	2,163,905	842,531	.....	489,949	13,903	124,290	100,000	46,155	131,368	9,104	8,205	52,068	78,528	4,060,006
Zinc chloride..	2,420,754	933,448	3,130,702	1,066,994	456,304	750,832	1,540,115	1,485,308	719,405	475,256	151,789	12,500	240,022	13,383,429
Miscellaneous..	.....	.....	12,411	.....	.....	.....	.....	56,496	.....	.....	.....	.....	.....	68,907
Total.....	23,848,786	16,232,926	5,859,890	3,407,309	3,312,191	2,229,278	2,159,264	1,883,118	1,753,863	499,450	317,902	72,206	987,728	62,563,911
Per cent of total.	38.1	25.9	9.4	5.4	5.3	3.6	3.5	3.0	2.8	0.8	0.5	0.1	1.6	100.0

*Includes distillate coal-tar creosote, creosote coal-tar solution, refined water-gas tar and water-gas tar solution.
†Includes distillate coal-tar creosote, creosote coal-tar solution, refined water-gas tar and water-gas tar solution in mixture with petroleum.
‡Includes distillate coal-tar creosote, creosote coal-tar solution, refined water-gas tar and water-gas tar solution in mixture with zinc chloride.



Indianapolis, Decatur & Springfield (Now B. & O.)

General News Department

Carl R. Gray, president of the Union Pacific, will speak on "The Problems of Rail Transportation" at the Transportation Section luncheon of the Illinois Chamber of Commerce at the Hotel LaSalle, Chicago, on October 19.

The New York Central (N. Y. C. proper, not including all system lines) announces that agreement has been reached with the clerks, freight handlers, baggage handlers and station employees to arbitrate a request of these employees for an increase in pay.

A continuous run of 928 miles was made by locomotive No. 2834 of the Chicago, Burlington & Quincy on October 6, 7 and 8, when it hauled the Overland Express from St. Louis, Mo., to Denver, Colo. Normally this run requires three locomotives. The train left St. Louis at 9:01 p.m. on October 6, and arrived in Denver at 7:30 a.m. on October 8.

The Central Railway Club will hold its November meeting at the Hotel Statler, Buffalo, N. Y., on November 11, 1926, at which time a lecture will be delivered on "The Story of Compressed Air," together with the showing of a five-reel film. The lecture will be preceded by a talk on "Oxygen, the Wonder Worker," by C. E. Harcke, which will be accompanied by a group of experiments.

Clerks of the Nashville, Chattanooga & St. Louis, represented by the clerks' association, have been promised an increase in pay which will amount to the estimated sum of $39,000 a year, about 1,000 individuals being affected. This announcement follows a decision rendered by an arbitration board, of which William Gupton, former mayor of Nashville, Tenn., was the neutral member.

The seventy-fifth anniversary of the opening of the Hudson River Railroad between New York City and Albany was celebrated on Friday, October 8, by the Mayor of New York, who sent a messenger, in the person of Daniel A. Sullivan, a boy of 15 years, to carry a letter to the Mayor of Albany, containing congratulations on the good fortune which resulted for both cities in the completion of the railroad. The boy, accompanied by a representative of the New York Central (the successor of the Hudson River) and two reporters, traveled on the train leaving New York at 1 p.m. Remarking on the accommodations furnished passengers on this train, including a dining car, one of the reporters observed that the passengers who went on the opening excursion from New York to Albany on October 8, 1851, partook of a cold luncheon, served in a round-house. The number of guests partaking of that repast was about 1,100, and the popping of champagne corks is said to have drowned the clatter of knives and forks.

Neutral Arbitrators Appointed

The United States Board of Mediation on October 9 named Edgar E. Clark, of Washington, D. C., and William D. Baldwin, of New York City, as the two neutral arbitrators on the board of arbitration, which will make an award on the question of wage increases demanded by the Order of Railway Conductors and the Brotherhood of Railroad Trainmen on the eastern railroads. The two appointments complete the personnel of the board, which will commence hearings in New York within 15 days under the terms of the agreement to arbitrate negotiated by the Board of Mediation on August 25.

The selection of the two neutral arbitrators by the Board of Mediation followed the failure of the four arbitrators named by the employee organizations and carriers to agree upon the neutral appointments during the 15-day period provided by law. It is understood that Mr. Baldwin was favorably considered by both employee and carrier representatives in the preliminary conferences between the parties to select the neutral arbitrators.

Mr. Baldwin is chairman of the Otis Elevator Company. Mr. Clark, for many years a member of the Interstate Commerce Commission, is now practicing law at Washington.

B. & M. Stock for Employees

The Boston & Maine announces that a plan has been adopted by the board of directors whereby employees who have been continuously in the service of the road since July 1, 1924, will have the privilege, until November 10, of purchasing, under an installment plan, a limited number of shares of the new 7 per cent prior preference stock of the company. Subscriptions may be for from one to ten shares. These shares are now quoted on the Boston Stock Exchange at 105 to 106, but are offered to the employees at 100. During the installment period, the road allows employees interest at 7 per cent.

Railway Business Women Meet

The Railway Business Women's Association of Chicago held its semi-annual business meeting on October 12 at the Auditorium hotel, Chicago. The outstanding feature of the meeting was the presentation of the constitution and by-laws of the association. Plans were approved for activities during the coming year. The educational department has arranged for a course of seven lectures to be given on the first Wednesday of each month. A parliamentary law class will hold sessions on Tuesday evenings beginning on October 5 at the Union Station auditorium. The Choral Club of 75 women will rehearse on Thursday evenings, starting October 7. Besides these activities, there will be a bowling league, classes in English, dancing, art and crafts, foreign languages and dramatic arts.

Changes in Regulations for Transportation of Explosives and Other Dangerous Articles Proposed

The Interstate Commerce Commission has announced a hearing at Washington on October 27 to consider objections which may be offered to proposed changes in the regulations for the transportation of explosives and other dangerous articles by freight and express, which, the commission's order says, are desirable in the interest of clarity and by reason of new information and altered conditions. The hearing will be held before W. P. Bartel, director of the commission's Bureau of Service. Acting under the act of March 4, 1921, the commission authorized the Bureau of Explosives to confer with interested shippers and others at the commission's offices on October 26, when opportunity will be afforded all interested parties to discuss and, if possible, agree upon the amendments proposed.

Flood Control Railroad Authorized

The Secretary of Agriculture has announced his decision in the controversy over the construction of a short railroad by the Los Angeles County Flood Control District in San Gabriel Canyon, California, in favor of an immediate authorization for building the railroad on national forest lands in the canyon. The project has been opposed by the city of Pasadena because of its possible interference with storage projects which the city has in contemplation.

The secretary has approved the plan recommended by the Forest Service under which a permit will be issued immediately to the Flood Control District for building the railroad required in the construction of the County dam at the Two Forks site. The permit will contain special stipulations designed to protect the interests of Pasadena and other municipalities which have pending water appropriations from San Gabriel River and pending applications for storage easements. One of the stipulations gives

the Secretary of Agriculture the right to require removal of the railroad to a higher location if it actually interferes with water appropriations or storage rights that may subsequently be acquired by Pasadena, Long Beach, or Whittier, all of which now have applications pending before the state and federal authorities for both water and storage grounds.

Correction in Report of Telegraph and Telephone Section A. R. A.

The statement was made in the October 2, 1926, issue of the *Railway Age*, on page 634, under the head of Report of Committee No. 6, that this committee did not recommend the placing of recorders in telegraph circuits, that "it would not be worth the cost; and such records may even be untrue, because signals which would reach the ear correctly may be unreadable on the tape." Our attention has been called to the fact that this part of the report was later withdrawn by the committee following a discussion on the floor of the convention. That there may be no further misunderstanding it should be noted also that in the original report of the committee the word "Morsegraph" was used and not "recorder," which it has been pointed out is not the same type of telegraph instrument.

Equipment Installed

Class I railroads during the first eight months this year installed in service 1,440 locomotives, the Car Service Division of the American Railway Association has announced. This was an increase of 227 over the number installed during the corresponding period last year but 57 below 1924. Locomotives on order on September 1 totaled 533, compared with 193 on the same date last year and 324 in 1924.

Freight cars installed in service during the first eight months totaled 77,225, a decrease of 28,221 under the corresponding period in 1925, and 27,731 under 1924. Of these 10,967 were placed in service during August, including 4,619 box cars, 5,145 coal cars and 679 refrigerator cars.

Class I railroads on September 1 had 20,251 freight cars on order compared with 20,863 on the same date last year and 41,476 in 1924. These figures as to freight cars and locomotives include new and leased equipment.

Management Week

National Management Week, instituted five years ago by the Bureau of Simplified Practice of the Department of Commerce, has this year become of so great importance, that nearly 40 industrial, professional and trade organizations in the Metropolitan District will hold an open meeting in the large auditorium of the United Engineering Societies' building, 29 West 39th street, New York, on the evening of October 26. Among the speakers expected are: Professor W. Chattin Wetherill, of the University of Pennsylvania; R. M. Hudson, director of the Bureau of Simplified Practice; Mrs. Frank B. Gilbreth, of the Taylor Society, and E. S. Cowdrick, of the Society of Industrial Engineers. Major Carlos de Zafra, of New York University College of Engineering, will act as chairman of the meeting.

The Division of Simplified Practice has been classifying many articles and commodities of daily use for simplification as to design and uniformity in specification. Interest has become so great that Management Week will be observed from coast to coast not only in the large cities but in communities of 2,500 and less. All the student sections of the six engineering societies at New York University will combine for a joint Management Week meeting to be addressed by a prominent industrial engineer.

Railroads Accept Chicago River Channel Change

Nearly $9,000,000 of railroad real estate will change hands in Chicago as the result of an agreement reached on October 10 between the city of Chicago and eight railroads which will make possible the straightening of a bend in the south branch of the Chicago river between Polk and Sixteenth streets. The present river channel will be abandoned and a new one made about 1,000 ft. west, necessitating the moving of the bascule bridge on the St. Charles Air line near Sixteenth street and rebuilding of the Taylor street bridge of the Baltimore & Ohio Chicago Terminal, in addition to extensive track changes by a number of railroads which have yards in the vicinity. The improvement has been initiated by the city to make possible the opening of three streets southward from the loop. In the future, following the channel change, a railway terminal representing a consolidation of the present Dearborn, La Salle and Grand Central passenger stations will be constructed in the area now occupied by the river. The railways involved in the real estate transfer are the Chicago & North Western, the Baltimore & Ohio, the Pennsylvania, the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy, the Chicago & Western Indiana, and the New York Central.

Wage Statistics for July

The number of employees reported by Class I steam roads to the Interstate Commerce Commission as of the middle of the month of July, 1926, was 1,857,219, an increase of 23,598, or 1.3 per cent, over the number for June, 1926. The total compensation shows an increase of $5,562,159, or 2.2 per cent. The greater percentage increase in compensation is due to an increase in the number of hours worked per employee, and a larger proportion of overtime.

Compared with the returns for the corresponding month last year, the number of employees reported in July, 1926, increased 3.4 per cent, and the total compensation increased 3.6 per cent.

The number of employees at the middle of the month was as follows:

Groups	July, 1926	Increase over June, 1926	Increase over July, 1925
Executives, officials and staff assistants	16,848	45	40
Professional, clerical and general	286,771	1,395	4,305
Maintenance of way and structures	473,517	15,211	42,000
Maintenance of equipment and stores	517,189	436	(d) 732
Transportation (other than train, engine and yard)	210,666	1,141	1,793
Transportation (yardmasters, etc.)	24,233	205	388
Transportation (train and engine service)	327,995	5,165	13,395
Total	1,857,219	23,598	61,550

(d) Decrease.

New Canadian Ministry Blocks Construction of Canadian National Hotel

The new King ministry in Canada has passed an order-in-council, rescinding the action of the Meighen government which authorized the construction of a $5,000,000 hotel for the Canadian National, at Vancouver, B. C., by a syndicate with offices in that city. An agreement between the Canadian National and the syndicate was approved during the three-month tenure of the Meighen government at Ottawa. The new ministry took strong exception to several provisions in the agreement. The hotel will be built, however, but not by the syndicate which had been awarded the work. Bids will be called for at an early date. A statement regarding the status of Warren & Wetmore Co., New York architects, with respect to the project of the Vancouver hotel, and also with the proposed extension to the Chateau Laurier at Ottawa, has been issued at Montreal, as follows:

"When these two projects were considered, the advice of this outstanding firm of architects in New York was sought by the operating department of the Canadian National Railways with respect simply to the general character of the structures, as this firm is recognized to have had an exceptionally wide experience in such work. Their services are now concluded, and it is the intention of the Canadian National Railways—as it always has been—to employ Canadian architects in the usual way for the preparation of plans and supervision of the work."

Florida East Coast Railway's Record

H. N. Rodenbaugh, vice-president of the Florida East Coast, summarizing the experiences of that company in the storm of September 18, says that the company's trains, which, for the time being, were the only means of communication between the stricken area and the outside world, were interrupted for only a few hours, at the peak of the storm, the tracks being substantially undamaged. The special train carrying doctors and nurses from Chicago was run from Jacksonville to Miami, 366 miles, in 9 hours 7 minutes, or at the inclusive rate of 40 miles an hour. The company moved any number of special relief trains for the Red Cross and later furnished free transportation to all destitute

people, making arrangements, where necessary, with connecting lines, so as to give these people tickets through to their destinations.

This road has only recently completed its extensive second track construction, and every rail and every bridge held perfectly against the storm. Huge quantities of food and medicine and large numbers of physicians, nurses and troops have been carried to the distressed regions free. Four sleeping cars and a dining car were placed at Fort Lauderdale, and two sleepers at Colohatchee. The railroad company's chlorinators were used by the Board of Health for purifying drinking water.

Officers of the road were on the ground quickly after the news of the approach of the storm came in, and C. L. Beals, assistant general manager, and other officers, waded into the water and rescued men, women and children. Over 400 of these refugees were fed and put to bed.

Loss and Damage Per Car Is High

A study made by the Freight Claim Division of the American Railway Association on loss and damage per car on the basis of cars originated for the first six months of 1926 shows that the largest loss per car, $10.15, occurred in shipments of fresh fruits and vegetables. The second highest loss was that for eggs which totalled $5.10 per car equal to approximately one-half as much as the loss on fruits and vegetables. Statistics on other commodities are shown in the following table:

Loss and Damage Six Months, 1926 and 1925

Commodity	Number of Cars	Loss and Damage	Aver. per car, 1926	Average 1925
Coal and coke	4,338,230	$775,036	$0.18	$0.22
Lumber and products	882,427	300,150	0.34	0.29
Cotton	112,969	38,084	0.34	0.42
Agricultural implements	91,499	67,919	0.74	0.74
Flour and mill products	447,046	479,077	1.07	1.15
Autos and trucks	486,201	542,741	1.12	1.39
Petroleum and products	174,614	209,335	1.20	0.91
Grain	530,017	912,294	1.72	2.53
Live stock	703,322	1,237,209	1.76	1.56
Fresh meats and packing house products	181,858	328,796	1.81	2.08
Canned goods	74,463	164,454	2.21	2.51
Butter, cheese and dairy products	28,277	91,366	3.23	2.49
Household goods	23,610	122,698	5.02	4.80
Furniture (new)	54,227	276,108	5.09	5.10
Eggs	37,043	190,971	5.10	6.46
Fresh fruits and vegetables	394,640	4,007,001	10.15	11.83

The Government Air Mail Service to Date

In a bulletin which has been issued by the Daniel Guggenheim Fund for the Promotion of Aeronautics (598 Madison avenue, New York City) dated October 7, there is a comprehensive review of what has been done by the government during the past seven years to promote the development of commercial aviation. Since the inauguration of the air mail service on a permanent basis, in 1919, the post office department has steadily increased its facilities and now has air mail planes traversing regular routes in 29 states. The mileage flown with the mails has increased 45 per cent since 1921, and is to be still further increased. The government-operated route between New York and San Francisco is the only one which has been in operation long enough to enable comparisons to be made, and the reports for last year show on this line only two fatalities, one for each 1,128,000 miles flown.

The first air mail route was opened May 15, 1918, between New York and Washington. This was discontinued in 1921. The transcontinental route was opened in 1919-1920, and the New York-Chicago line, with daily schedules involving night flying, was started July 1, 1924. The New York-Chicago night air mail was started in 1925. The pamphlet gives data concerning private airplane operations and a table showing the miles, the number of letters carried and the government expenditures, on government-operated lines, for six years.

The pamphlet concludes with a discussion of the probable progress in this field, the most important element of which is the need of convincing the people generally of the degree of safety that can be expected in aviation; "the primary cause of the slow development in commercial aviation having been the lack of positive support occasioned by the absence of safety."

It is the policy of the government to turn over the transportation of mail by air to private operations as soon as practicable and the plans of the government for providing lights and other navigational aids are described at some length. There are already in the postal air service 572 employees; and 61 planes are equipped for night flying. The department has a shop at Maywood, Ill., where motors are overhauled after each 100 hours of service. The department has ordered 51 new planes.

National Association of Railroad Commissioners

James B. Walker, New York City, secretary of the National Association of Railroad and Utilities Commissioners, has issued the call for the thirty-eighth annual convention of this association, to be held at Battery Park Hotel, Asheville, N. C., beginning on Tuesday, November 9.

Interstate motor vehicle operation will be one of the principal subjects to be brought up for discussion and reports will be made on it by Chairman C. H. Jones and Hon. John E. Benton. This subject is assigned for Thursday morning. Water power and its regulation will be discussed on Tuesday evening, the discussion to be presided over by Chairman A. Kanneberg. Railroad rates will be the subject of a report to be presented by F. P. Morgan, of Alabama, chairman; and federal and state co-operation by P. A. Walker, of Oklahoma.

Besides the foregoing and the regular reports from standing committees, the convention will be addressed by Hon. John J. Esch of the Interstate Commerce Commission and others. Among these are M. H. Aylesworth, former chairman of the Public Utilities Commission of Colorado; Alexander Forward, formerly of the Virginia Corporation Commission; Hon. H. A. McKeown, chief railway commissioner of Canada; C. C. McChord and Edward W. Bemis.

A great variety of entertainment will be provided; music and dancing every night, early morning golf, a motorcade over the Blue Ridge Mountains and, on the evening of November 11, a grand banquet. These and other features are being planned by the North Carolina Commission and the hospitable people of Asheville.

A. G. Patterson, of Alabama, is president of the Association, and John F. Shaughnessy of Nevada is chairman of the executive committee.

California to Vote on Short Line Tax Reduction

Thirty-eight short line steam railroads of California will be directly affected by the outcome of the referendum vote at the general election, November 2, for the ratification of a constitutional amendment to reduce the state tax rate on the gross receipts of steam railroads under 250 miles in length from 7 per cent to 5¼ per cent. These railroads, working for ratification of the amendment through their organization, California Short Line Railroads, believe that a tax rate which classes them with transcontinental roads is unjust and asks that they be placed on the same tax level with the interurban electric and street railways which pay 5¼ per cent of their gross receipts as an annual tax.

These short lines vary in length from the Howard Terminal, 1.59 miles, to the San Diego & Arizona, 156 miles, with an average length of 34 miles.

The executive committee of the association points out that nearly all of these roads are owned by persons living along their lines. Very few have ever paid dividends and the majority do not earn their bond interest. Traffic is largely one way or seasonal and operation is made difficult by the mountainous and desert country in which most of these railroads are located.

In California, with a dual system of taxation in effect, property is taxed either to produce revenue for local governmental units (county or city) or to produce revenue for the state government. The public service corporations are taxed a fixed percentage of their gross receipts to produce funds to be expended by the state.

The amendment to the state constitution by which this system was inaugurated named the classes of property subject to state taxation and fixed an initial rate of four per cent on railway operating revenues of all railroads. Two years later this rate was raised by the legislature to 5¼ per cent, to be paid by both steam and electric railroads. In 1921, the legislature again revised the tax rates on public service corporations, raising the

gross receipts tax rate on all steam railroads to seven per cent, the rate in force today, but leaving the tax rate on electric railroads at the old figure, 5¼ per cent.

American Association of Passenger Traffic Officers

The 70th annual convention of the American Association of Passenger Traffic Officers will convene at the New Arlington hotel, Hot Springs, Ark., on October 29 and 30. In addition to reports of the executive, standing and standing joint committees and committees on standard forms of interline tickets, official digest of fares and divisions and adjustments of disputes relative to the division of passenger fares, reports will be received from the standing territorial committees on subjects that have been assigned to them. A special committee will report on the saving in cost of local and through folders and another will report on "Save to Travel" clubs.

Arrangements have also been made for a general discussion of certain selected subjects, such as the substitution of rail motor cars for steam trains; the operation of bus lines by carriers; refinements of service to increase attractiveness of rail travel, including the improvements in the type of equipment, both Pullman and coach; greater attention to detail in conveniences provided for the comfort of passengers; the pooling of competitive train service; the development of head-end traffic, including mail, express, baggage, milk and cream; advertising, including the percentage of total advertising expenses to total passenger revenue; community efforts; joint advertising of resort excursion fares, etc.; the use of posters; the experiences of the year 1926 in low-rate excursion traffic; the method of handling Pullman reservations; co-operation with "Save to Travel" groups, tourist bureaus, steamship companies, etc.; and the simplification of passenger tariffs.

Besides the consideration of these subjects there will be an election of officers, including the president, vice-president and secretary, the nomination of four members of the executive committee by the president and the approval by the association and the appointment of standing committees.

Fall Meeting American Welding Society

Technical sessions, exhibitions and demonstrations will be held in connection with the annual fall meeting of the American Welding Society at the Broadway Auditorium, Buffalo, N. Y., November 16, 17, 18 and 19. A large variety of welded products will be a unique feature of the exposition of welding apparatus and supplies, which will open on Tuesday afternoon, November 16. The technical sessions will begin Wednesday morning at 10 a. m. During these sessions the progress made by the welding research department of the American Welding Society (American Bureau of Welding) will be discussed. The program for the meeting is as follows:

WEDNESDAY, NOVEMBER 17.

Morning: "Welding of Locomotive Parts," by M. Gjersten, master welder, Northern Pacific Company; "Organization of Welding on the Railroad," by F. H. Williams, assistant test engineer, Canadian National.

Afternoon: "Comparative Tests on Arc and Riveted Structural Members," by A. M. Candy, general engineering department, Westinghouse Electric & Manufacturing Company; "Tests on Welded Roof Truss," by H. H. Moss, Linde Air Products Company.

THURSDAY, NOVEMBER 18.

Morning: "Welding Science in the Engineering Curriculum of Universities," by Prof. G. J. Hoffman, Purdue University; Prof. B. L. Lucas, Mississippi Agriculture and Mechanical College; Prof. S. T. Hart, Syracuse University; Prof. deZafra, New York University; Prof. R. D. Rickley, Ohio State University; Prof. F. V. Larkin, Lehigh University.

Afternoon: Welding Wire Specifications Committee, C. A. McCune, chairman; meeting of the American Bureau of Welding; dinner dance.

FRIDAY, NOVEMBER 19.

Morning: Short technical session on Welding in a Gaseous Atmosphere, including demonstrations and exhibitions, will be made by P. P. Alexander and R. A. Weinman, of the General Electric Company; meeting of Board of Directors.

Afternoon: Inspection trip to Niagara Falls Power House.

Traffic News

The Associated Traffic Clubs of America will hold their annual fall meeting at Milwaukee, Wis., on October 26.

The National Industrial Traffic League will hold its annual meeting at the Hotel Commodore, New York, on November 17 and 18.

A testimonial dinner was given by the Traffic Club of Chicago in honor of J. J. Pelley, newly elected president of the Central of Georgia, on October 12. L. A. Downs, newly elected president of the Illinois Central, also was a guest of honor.

Five trainloads of washing machines left the factory of the Maytag Company at Newton, Iowa, on October 12, over the Chicago, Rock Island & Pacific en route to Chicago, where they arrived on October 13. At Chicago the shipment was split up and sent over five different railways to Philadelphia, Pa., where the machines will be distributed throughout the east. The shipment, 130 carloads, contained 11,000 washing machines valued at $2,000,000.

Following the controversy over grain sampling, the Great Northern, the Northern Pacific and the Minneapolis, St. Paul & Sault Ste. Marie, have proposed to the Minnesota Railroad Commission a charge of $4 a car or three mills a bushel on grain held at outlying points for sampling to become effective October 18. No charge would be made for sampling at destination points. Samples, which form the basis of competitive bidding between Minneapolis and Duluth, are taken from cars stopped in transit.

The American Travel Development Association will hold a convention at St. Louis, Mo., on November 1 and 2 to further co-operate with railroads, tourist booking agencies and other directors of rail travel as well as to further the standardization of automobile tourist camps and provisions for adequate hotel accommodations for traveling motorists. Congress will be memorialized for an appropriation creating a travel campaign fund, to encourage Americans in using their own national parks, monuments and forests. Other methods of advertising to develop a desire to travel will be discussed.

Mid-West Shippers' Advisory Board Meeting

Favorable business conditions will exist throughout mid-west territory for the rest of the calendar year, according to the forecasts of 46 commodity committees presented at the eleventh regular meeting of the Mid-West Shippers' Advisory Board at Madison, Wis., on October 7. For a great majority of the commodities represented, business is expected to exceed considerably the corresponding quarter of last year. An increase of 5 per cent is expected in brick and clay products, 12 per cent in cement, 12 per cent in coal and coke, 5 per cent in dairy products, 10 per cent in glass containers, grain and grain products, and hides and leather, 7 per cent in lumber, 10 per cent in machinery and machines, 7 per cent in paper and pulp, 10 per cent in petroleum and shells, and 5 per cent in soap and its by-products. Decreases are anticipated in the movement of canned goods, groceries and food products, iron and lumber products.

The movement of coal from Indiana, Illinois, Iowa and docks on Lake Michigan will exceed last quarter's movement by 60 per cent and the last quarter of 1925 by 12 per cent. The confectionery committee reported that many manufacturers are employing night shifts to bring up productive capacity and that the industry should show a very material increase over last year.

Freight No Factor in Apple Price Changes

That the railroads have played an important part in the development of the apple industry is shown by a bulletin issued by the Bureau of Railway Economics based on a study as to the relationship of apple prices to transportation costs.

In 1900 the middle Atlantic states led in apple production, with the North Central states east of the Mississippi river in second

place, but the Rocky Mountain and Pacific states now produce more apples than any other section of the country.

Freight rates do not restrict the widespread distribution of apples. Apples from Washington moved over 2,900 miles to New York City and entered the same market with apples raised but a few hundred miles away. In October, 1925, apples were shipped to New York City from 18 states and Canada. During the same month, 16 states and Canada supplied Chicago. Washington supplied more apples to Detroit than Michigan itself.

Boston in 1925 received apples from 21 states, more being shipped from Washington than any other one state. Cleveland, Ohio, received apples from 20 states, Cincinnati from 23, Indianapolis, 22, Milwaukee, 20, Memphis, Tennessee, 22, Birmingham, Alabama, 21, New Orleans, 22, and Washington, D. C., 11.

The study further shows that the freight rate has been no factor in price fluctuations, and that there was a marked contrast between the fluctuations in prices and the comparative stability of freight rates.

Hearing in New York City on Coal Rates

The question of reducing freight rates on bituminous coal from Pennsylvania and West Virginia to eastern seaboard and New England points, which is being investigated by the Interstate Commerce Commission, has been the subject of hearings in New York City during the past ten days, before Commissioner J. B. Campbell.

Testimony was presented to the effect that a reduction of 10 cents a ton in these rates would cause a loss in gross earnings to the Pennsylvania Railroad of $2,672,000 yearly; to the Baltimore & Ohio, $1,711,000, and to the New York Central, $568,000. The revenue on bituminous coal represents 25 per cent of the total freight revenue of the Pennsylvania, and 33 per cent on the Baltimore & Ohio.

The railroads have suffered a loss of traffic in this field during the past five years because large consumers in New York City have provided docks, so that they receive coal in large vessels direct from Hampton Roads. These consumers, through this change, have reduced the cost of their coal by 50 cents a ton or more.

Traffic officers of the New York, New Haven & Hartford, the Boston & Maine and the Central Vermont protested against reductions. E. L. McCaulley, assistant general freight agent of the Western Maryland, citing the rapid increase of coal traffic through Hampton Roads, suggested that if the commission could not advance the rates over the lines leading to Hampton Roads, the rates over the Western Maryland should be reduced.

Passenger Traffic Again Declining

Railway passenger traffic, after having declined almost steadily for several years and then increased in the months from September, 1925, to May, 1926, has again shown a falling off in June and July of this year, as compared with the corresponding months of last year, according to the Interstate Commerce Commission's monthly statement of revenue traffic statistics for July. This report, covering 171 Class I steam railways, still shows an increase in passenger revenues and passenger mileage for seven months of 1926, as compared with the first seven months of 1925, in spite of a decrease in the number of passengers carried, but both June and July shows decreases in revenues and passenger mileage, as compared with last year.

For the seven months the passenger revenues as shown by this report were $601,769,490, as against $596,251,951 for the corresponding months of last year, and the passenger-mileage was 20,364,208,000, as compared with 20,277,219,000. The average mileage per passenger per road was 40.69, as compared with 39.28, so the increase as shown by these figures did not hold good as to the number of passengers carried.

In each month from September to May, inclusive, there was an increase, as compared with the corresponding month of the previous year, in passenger revenues, as well as in passenger miles, but a decrease in the total number of passengers carried. In June, however, the passenger revenues of the roads included in this report were approximately $200,000 less than for June, 1925, and for July they were $97,555,456, as compared with $97,778,801. The number of revenue passengers was 73,078,000, as compared with 76,382,000 and the passenger mileage was 3,501,565,000, as compared with 3,543,475,000.

Commission and Court News

Interstate Commerce Commission

Eastern Class Rate Investigation

The Interstate Commerce Commission has announced that following the receipt of briefs in its Eastern Class Rate Investigation, which are due November 1, a tentative report will be issued by the commission and the respondent carriers will make a revenue test based on such rates as may be proposed in that report, for the purpose of ascertaining its effect. The test will embrace all class-rate traffic involved in the proceeding that is waybilled on 12 days during 1925, viz., one Monday in January and April, one Tuesday in July and October, one Wednesday in February and May, one Thursday in August and November, one Friday in March and June, and one Saturday in September and December. In computing distances between points in trunk line territory for the revenue test the carriers, after conferring with Chairman Eastman, have decided to follow the rule prescribed by the commission in its report in the Southern class rate investigation, to the effect that the shortest routes shall be used over which carload traffic can be moved without transfer of lading.

State Commissions

One Agent to Cover Two Stations

The Public Service Commission of New York has authorized the Boston & Maine to discontinue the services of its agent at East Schaghticoke, but the station must continue as an "open collect" station, with no changes in the freight tariff; and the agent at Schaghticoke village must be on duty at East Schaghticoke one hour each day. Furthermore, during the Schaghticoke Fair there must be a full-time agent at East Schaghticoke, beginning three days before and continuing until three days after the fair.

Court News

Contributory Negligence in Failing to Attempt to Extinguish Fire

The plaintiff in an action for the destruction of fencing and pasture by fire from an engine was held guilty of contributory negligence in making no effort to extinguish the fire except to call up a roundhouse nearly a day after the fire was discovered.—Maxwell v. Quincy., O. & K. C. (Mo. App.), 277 S. W. 949.

Not Negligent to Pile Ties on Right of Way Near Public Path

The Texas Court of Civil Appeals holds that a railroad is not negligent in piling ties on its right of way near a path commonly used by the public, and was not liable for injury to a child climbing on the ties when one, placed on edge, fell on her leg.—Gainey v. I. & G. N. (Tex. Civ. App.), 280 S. W. 852.

Accidents From Falling Car Windows

The Kentucky Court of Appeals holds that where a passenger's arm was injured by a falling car window the doctrine of res ipsa loquitur does not apply, the window not being under the railroad's exclusive control and management. If there was no defect in the window or its fastenings, and no movement of the train calculated to cause the window to fall, the railroad was not liable, where it was not shown who raised the sash, and it was shown that the sashes were frequently raised by passengers and others. The railroad is not required to inspect the window when raised to see that it is at the proper height, or to keep a lookout to see that windows are not raised by passengers when the weather and conditions are such as require ventilation in the car.—Chadwick v. L. & N. (Ky.), 281 S. W. 1018.

Foreign Railway News

Railway Amalgamation in Estonia Proposed

A proposal to amalgamate the broad and narrow gauge state railways in Estonia was recently submitted for the approval of the government authorities, according to F. W. B. Coleman, American minister at Riga, Latvia. At present the broad and narrow gauge lines are administered separately. It is hoped to have the new plan in operation before January 1, 1927. The new plan is expected to save at least 6,000,000 marks ($16,000) annually, and to reduce the combined working forces of 2,500 persons.

French Minister of Finance Authorized to Issue Bonds

The French Minister of Finance has been authorized, by a decree published in the Journal Officiel of August 27, to issue 500,000 seven per cent bonds to help meet the needs of the state railways, according to Eugene A. Masuret, United States trade commissioner's office at Paris, in Commerce Reports. The bonds are amortizable, of a nominal value of five francs each, which are redeemable in 15 years by semesters. The first reimbursement to take place January 1, 1927, and the last one on July 1, 1941.

Work Progressing on Mexican Short Line

Construction of the "Short Line," from Tampico to Beristan, in Mexico, is progressing as fast as shipments of steel from Europe, and ties from the United States arrive in Tampico, according to Pico Pep, the bulletin of the American Chamber of Commerce of Tampico. Part of the Short Line has been in operation for several months, being used by the Panuco Valley under a tonnage agreement. Grading on the right-of-way is progressing toward Guadalupe. Two routes are being considered for the Short Line from Guadalupe, one which provides for the construction of the railroad through Zapote, Puebla, and then to Zanetepec, where a branch will be built to Honey, and another to Vera Cruz; or, as is being seriously contemplated, to Tuxpam along the north bank of the Tuxpam river. From Tuxpam the road would probably continue parallel with the coast to Naranjo, and then turn into the interior to Beristan. A contract for a bridge across the Panuco river at Tamos has been awarded to the Missouri Iron & Steel Company, work to start as soon as the river current is in a normal condition, which should be during November.

Extensive Railway Development in Manchuria During 1925

Extensive railway development took place in Manchuria during 1925, according to Samuel Sokobin, United States consul at Mukden, China, in Commerce Reports. The first railway construction undertaken in 1925 was a 190-mile line from Mukden to Hailung. The undertaking was semi-official and involved the construction of a standard gauge line between these two points, traversing a rich, thickly populated area, which produces beans, hemp, wheat, tobacco and mineral resources.

Another important transportation development was the undertaking of construction of a railway from Taonan, northward to Tsitihar, a distance of 150 miles. The line is an extension of the Ssupinghai-Taonan, which connects with the South Manchurian at Ssupinghai, north of Mukden. Considerable opposition was raised to the construction of the line because it is feared that traffic now handled by the Chinese Eastern may be diverted to the new line. Contracts were let late in 1925 for the construction of the Kirin-Tunhua line, construction of which will begin near the end of 1926. This railway, which lies entirely within Kirin province, will run a distance of 162 miles from Kirin City due east to Tunhua. The line will be an extension of the Kirin-Changchun, which joins the South Manchurian west of Changchun. The extension will tap a rich timber district and a fertile agricultural country.

Equipment and Supplies

Locomotives

THE PERE MARQUETTE is inquiring for 10 U. S. R. A. light Mikado type locomotives.

THE BALTIMORE & OHIO is inquiring for 25 Mountain type passenger locomotives.

THE OSTRANDER RAILWAY & TIMBER COMPANY has ordered one 2-6-6-2 Mallet type locomotive from the Baldwin Locomotive Works.

Freight Cars

THE CENTRAL OF GEORGIA is inquiring for 20 underframes for caboose cars.

THE PERE MARQUETTE has ordered 25 ore cars of 50 tons' capacity from the Pressed Steel Car Company.

THE LOUISVILLE & NASHVILLE has ordered 20, 30-cu. yd. drop door, air dump cars from the Koppel Industrial Car & Equipment Company.

THE SOUTH AFRICAN RAILWAYS are inquiring through the carbuilders for 12 tank cars of 5,000 Imperial gal. capacity and 12 tank cars of 6,000 Imperial gal. capacity.

THE CHICAGO, NORTH SHORE & MILWAUKEE has ordered four caboose cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of September 4.

THE CHICAGO & NORTH WESTERN is inquiring for 100 46-ft. flat cars of 50 tons' capacity. In the *Railway Age* of September 18 mention was made that the purchase of this equipment had been authorized.

THE GREAT NORTHERN has ordered 500 steel underframes for automobile cars from the Pressed Steel Car Company. Inquiry for these underframes was reported in the *Railway Age* of September 18.

Passenger Cars

THE CHICAGO, BURLINGTON & QUINCY has placed an order with the Electro-Motive Company for five gas-electric motor cars, all equipped with the model 120 power plant.

THE OAHU RAILWAY & LAND COMPANY, Honolulu, T. H., has ordered five power units for motorizing of equipment to be operated on its narrow gage lines, from the Railway Motors Corporation.

THE GREAT NORTHERN has ordered one gas-electric, combination passenger, baggage and mail car, equipped with a model 120 power plant, from the Electro-Motive Company. The Great Northern has given an order for one baggage gas-electric mail motor car to the J. G. Brill Company.

Iron and Steel

THE SOUTHERN PACIFIC is inquiring for steel for a new freight station at Dallas, Tex.

THE NEW YORK CENTRAL has placed orders for about 150 tons of steel for a bridge at Van Cortlandt Park, N. Y.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 50,000 tons of rail, a part of which was placed with the United States Steel Corporation.

THE CHICAGO, BURLINGTON & QUINCY has ordered 400 tons of structural steel for a passenger station at Lincoln, Neb., from the Vierling Steel Works.

THE ATCHISON, TOPEKA & SANTA FE has ordered 14,720 tons of 110-lb., 39-ft. rail from the Illinois Steel Company, 70,245 tons of the same size and 44,865 tons of 90-lb., 39-ft. rail from the Colorado Fuel & Iron Company. In addition 3,033 tons of tie plates were placed with the Illinois Steel Company and 14,077 tons with the Colorado Fuel & Iron Company.

The New York Central and the Pennsylvania Place Large Orders for Rail

The New York Central has placed orders for steel rails covering the requirements of the New York Central Lines for 1927 at a cost of $9,800,000 as follows:

Bethlehem Steel Company	95,750 tons
Illinois Steel Company	89,000 tons
Inland Steel Company	21,350 tons
Carnegie Steel Company	18,625 tons
Algoma Steel Company	2,950 tons
Total	227,675 tons

Of the above tonnage, 170,000 tons have been purchased for immediate specification and the balance covered by option subject to future specification.

The tonnage and weight of rail is as follows:

127 lb.	75,400 tons
115 lb.	10,325 tons
105 lb.	138,950 tons
90 lb.	3,000 tons

The Pennsylvania has placed orders for 160,000 tons of rails for 1927 delivery. The order is divided among the steel companies as follows:

Bethlehem Steel Company	70,000 tons
Carnegie Steel Company	50,000 tons
Illinois Steel Company	30,000 tons
Inland Steel Company	10,000 tons
Total	160,000 tons

The railroad has reserved the right in each case to increase the tonnage of the order by 25 per cent.

Machinery and Tools

THE MISSOURI PACIFIC has ordered a sensitive drill from the Niles-Bement-Pond Company.

THE HOCKING VALLEY has ordered one 18-in. by 10-ft. engine lathe from Manning, Maxwell & Moore, Inc.

THE MICHIGAN CENTRAL has ordered a 100-ton hydraulic bushing press from Manning, Maxwell & Moore, Inc.

THE NEW YORK CENTRAL is inquiring for two 25-ton locomotive cranes in addition to the two reported in the *Railway Age* of October 2. The New York Central has ordered a 4-ft. radial drill from the Niles-Bement-Pond Company.

THE ILLINOIS CENTRAL has ordered two 22-ton standard bucket cranes for use at Gulfport, Miss., from the Orton Crane & Shovel Company. The Illinois Central has ordered a 10-ft. full pneumatic flanging clamp from the Niles-Bement-Pond Company.

Signaling

THE UNION PACIFIC has ordered from the Union Switch & Signal Company an electric interlocking for Summit, Nebr., 23 working levers.

THE PACIFIC ELECTRIC has ordered from the Union Switch & Signal Company a mechanical interlocking, 12 working levers, for installation at Clearwater, Cal.

THE ATCHISON, TOPEKA & SANTA FE has ordered from the General Railway Signal Company an electric interlocking for San Bernardino, Cal., 62 working levers and 42 spare spaces.

THE LOUISVILLE & NASHVILLE has ordered from the General Railway Signal Company an electro-mechanical interlocking for Lebanon Junction, Ky.

Supply Trade News

The Roberts-Pettijohn-Wood Corporation, Chicago, has moved its offices from 646 North Michigan avenue to Suite 811, 844 Rush street.

The Bourne-Fuller Company, Cleveland, Ohio, has moved its Detroit offices from the Dime Bank building to 5-158 General Motors building.

The Elwell Parker Electric Company, Cleveland, Ohio, has let a contract to the Boldt Construction Company for a four-story addition to its plant, 40 ft. by 120 ft.

The Chicago Pneumatic Tool Company plans the construction of a plant at Franklin, Ill., for the manufacture of Diesel engines, to cost approximately $500,000.

The Mowbray & Robinson Lumber Company, Cincinnati, Ohio, has purchased the mill, timberlands and all equipment of the **Noble-Hyden Lumber Company,** West Irvine, Ky.

L. T. Pockman, manager of the Los Angeles district of the **Chicago Pneumatic Tool Company,** with headquarters at Los Angeles, Cal., has been promoted to Pacific coast manager.

R. E. McKee, assistant manager of the tie and timber sales department of the **Long-Bell Lumber Company,** with headquarters at Kansas City, Mo., has been promoted to manager of the New York sales office.

George E. Watts, 1523 Candler building, Atlanta, Ga., has been appointed special representative of the **J. S. Coffin, Jr., Company,** Jersey City, N. J. For 18 years prior to his association with this company he was the southern representative of the Duff Manufacturing Company.

J. M. Moore, for the past seven years assistant auditor of the Denver & Salt Lake, is leaving the service of the railroad to enter the supply trade field, handling railway and industrial supplies. He will be located in the future at 1037 United States National Bank building, Denver, Colo.

W. B. Flanders, engineer, large turbine division of the engineering department at the South Philadelphia works of the **Westinghouse Electric & Manufacturing Company,** has been appointed assistant manager of engineering. **R. C. Allen,** assistant to chief engineer, has been appointed manager of large turbine engineering; **J. A. MacMurchy,** engineer, small turbine division, has been appointed manager of small turbine engineering, and **D. W. R. Morgan,** engineer, condenser division, has been appointed manager of condenser and internal combustion engineering.

Trade Publications

GRATING AND TREADS.—The Grating Company of America, Pittsburgh, Pa., has issued a four-page folder descriptive of the predominating features of Tri-Lok grating and tread for industrial plants, power plants, runways, car steps, etc.

THE SPECIAL TRAIN over the Pennsylvania Railroad on October 7 and 8, carrying the Cardinal baseball club from St. Louis to New York, traversed the 1,052 miles between the two cities in 21 hours, 22 minutes, equal to 49.27 miles an hour, the second fastest run in the history of this line. The best run, 20 hours, 28 minutes, was made on November 16, 1925. The train now reported was made up of seven cars while that of last year had six. The Cardinals' special left St. Louis at 4:59 p. m., central time, on Thursday and arrived in New York at 3:21 p. m. on Friday. Two other specials carrying baseball fans and reporters made nearly as good time; one leaving St. Louis at 6:31 p. m. and the other at 7:36 p. m. The "American," the 24-hour regular train, leaving St. Louis on Friday morning, had a second section, chiefly for the accommodation of the baseball enthusiasts.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—Company forces will construct additional yard facilities at Amarillo, Tex., including about 10 miles of new trackage.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the Sharp & Fellows Construction Company for grading in connection with the double tracking of 22 miles of line east and west of Amarillo, Tex., from St. Francis to Haney. Tie and rail laying will be done by company forces.

ATCHISON, TOPEKA & SANTA FE.—Plans are being prepared for the construction of an engine terminal at Emporia, Kan., including a 50-stall enginehouse, an apprentice school building, a 1,000-ton coaling station with 1,500-cu. yd. sand bins, cinder conveyors, oil and water lines and a power house.

BALTIMORE & OHIO.—A contract has been awarded to the Sheesley & Janney Company, Johnstown, Pa., for the construction of a sub-structure for a bridge at Massillon, O.

BALTIMORE & OHIO.—A contract has been awarded to the Vang Construction Company, Cumberland, Md., for the construction of new yards at Rossford, O., at an estimated cost of $175,000.

CHICAGO, MILWAUKEE & ST. PAUL.—A contract for the construction of a one-story tile and stucco combined freight and passenger station at Waukon, Iowa, estimated to cost $15,000, has been let to J. C. Jacobsen, Waukon.

CHICAGO, MILWAUKEE & ST. PAUL.—An order has been issued by the federal court of Northern Illinois authorizing the expenditure of $3,571,000 for the construction of 2,700 ft. of track elevation and 2,300 ft. of track depression in Milwaukee, Wis. This order obligates this company to comply with an order of the Railroad Commission of Wisconsin issued in 1915. A contract for the construction of a one-story tile and stucco combined freight and passenger station at Waukon, Iowa, estimated to cost $15,000 has been let to J. C. Jacobsen, Waukon.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract for the construction of a reinforced concrete viaduct over College street, Iowa City, Iowa, has been awarded to A. A. Alexander, Iowa City. The cost, $36,900, will be borne jointly by the railroad and the city.

FAIRPORT, PAINESVILLE & EASTERN.—A contract has been awarded to the Hecker-Moon Company, Cleveland, Ohio, for the construction of a roundhouse and a one-story machine shop at Painesville, Ohio, at a cost of about $75,000.

LOS ANGELES & SALT LAKE.—Plans are being prepared for the construction of an under-grade highway crossing at Downey road, Los Angeles, Cal., which will be effected by raising 3,200 ft. of double main track, 1,700 ft. of single main track, 1,350 ft. of secondary trackage, relocating and depressing the highway and constructing two 36-ft. deck plate girder spans with two 21-ft. I-beam approach spans over the sidewalks. The total work will cost about $102,000 and bids will soon be asked for the substructure. Company forces will enlarge the bore and reline with reinforced concrete 291 lineal feet of Tunnel No. 18 near Brown, Nev., with an approximate expenditure of $40,000.

MISSOURI PACIFIC.—Bids were received until October 11, for the raising of main and side tracks at Wolcott, Kan., at an estimated cost of $80,900. Plans are being prepared for the strengthening of the spans of Bridge No. 105, at Riverton, La., estimated to cost $110,000.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been awarded to V. N. Famiglietti & Sons, Inc., for the construction of engine facilities at Greenbush, Mass. This company has also authorized the construction of 4 l. c. l. tracks at Cedar Hill, Conn., at an estimated cost of $50,000; construction of locomotive flue storage facilities at Readville, Mass., at an estimated cost of $30,000; and construction of additional classification tracks at Hartford, Conn., at an estimated cost of $28,500. The work at Cedar Hill, Readville and Hartford will be done by company forces.

NORTHERN PACIFIC.—A contract has been let to the Widell Company, Mankato, Minn., for the building of the substructure in connection with the replacement of the bridge across the Mississippi river at Minneapolis, Minn. A contract for fabricating the steel, amounting to 1,300 tons, has been awarded to the American Bridge Company, Chicago, while a contract for the erection of the steel will be let in the near future. Yard tracks and the main line at Pasco, Wash., will be extended and changed by company forces at a cost of about $75,000.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—Bids have been requested for the construction of a one-story brick and terra cotta trimmed passenger station with brick platform and driveways at Yakima, Wash., estimated to cost $41,000. A contract has been awarded to Tranchell & Parelins for the construction of a 20-ft. by 50-ft. enginemen's house and board room with a 12-ft. by 24-ft. foreman's office and a 23-ft. extension to nine stalls of the roundhouse at LaGrande, Ore., to cost about $28,000.

PERE MARQUETTE.—A contract has been let to Thomas Rayment, Chatham, Ont., for the construction of a one-story frame passenger station at Chatham.

SAND SPRINGS.—A contract has been let to J. R. Forner, Tulsa, Okla., for the construction of a one-story brick passenger station at Tulsa, to cost $15,000.

ST. LOUIS-SAN FRANCISCO.—Company forces are installing a 100-ft. turntable at Ft. Scott, Kan., at an estimated cost of $42,000. Contracts for the masonry work in connection with the strengthening of 10 steel bridges between Kansas City, Mo., and Springfield have been let to the J. W. McMurry Contracting Company, Kansas City, while contracts have been awarded to the Kelly-Atkinson Construction Company, Chicago, for the steel erection. The total cost of the work is about $540,000. A contract has been awarded to the List & Weatherly Construction Company, Kansas City, for a portion of the work in connection with the strengthening of the Mississippi river bridge at Memphis, Tenn., estimated to involve an expenditure of $170,000.

ST. LOUIS SOUTHWESTERN.—Company forces will construct a brick passenger station, 24 ft. by 134 ft., at Fordyce, Ark., which with track changes will involve an expenditure of $24,000.

UNION PACIFIC.—A contract for the construction of a brick and reinforced concrete oil house, 28 ft. by 62 ft., at Council Bluffs, Iowa, at a cost of $50,000 has been let to H. E. Schraven, while company forces have started the extension of tracks serving ice docks including extension of the bridge over Thirty-fifth street at that place. A contract for the grading, bridging and culverts on nine miles of branch line and two miles of side track south and west of Gering, Neb., expected to cost $273,000, has been let to C. T. Whelan, North Platte, Neb. Contracts have been awarded to Ryberg Brothers, Salt Lake City, Utah, for the excavation and concrete abutments in connection with the construction of two through plate girder undergrade crossings, 35 ft. and 70 ft. long respectively, over the Lincoln Highway near Castle Rock, Utah, at a total cost of $50,000. Steel erection will be done by company forces in each case. A contract has been awarded to Jack Farrington for the sinking of a well 1,400 ft. deep at Riner, Wyo. Including the construction of a 36-ft. by 42-ft. frame addition to the pumphouse and the installation of pumping equipment. The project is expected to cost about $50,000. A contract has been awarded to Peterson, Shirley & Gunther, Omaha, Neb., for the grading of a line extending to a point 8.5 miles south of Yoder, Wyo., and including 1.5 miles of side track. This line is expected to cost $285,200.

VENICE, ENGLEWOOD & SOUTHERN.—The Interstate Commerce Commission has extended to March 31, 1927, and March 31, 1928, respectively, the time for the starting of construction, and the completion of this company's line in Florida which was authorized by the commission in a certificate dated April 19, 1926.

Railway Financial News

CHICAGO, MILWAUKEE & ST. PAUL.—*Investigation.*—The Interstate Commerce Commission has announced that hearings in connection with its investigation will be resumed at Spokane, Wash., on October 25 before Commissioner Cox.

CHICAGO, MILWAUKEE & ST. PAUL.—*Foreclosure Sale.*—Federal Judge James H. Wilkerson on October 12 denied an appeal from his recent order refusing minority stockholders of the St. Paul the right to intervene as dissenters from the reorganization plan and sale of the road. Under the terms of Judge Wilkerson's order the sale of the road will proceed as scheduled at Butte, Mont., on November 22. Attorneys for the minority stockholders have taken their case to the United States Circuit Court of Appeals and a hearing on Judge Wilkerson's decision will be heard on October 18.

GEORGIA & FLORIDA.—*Reorganization.*—The plan for the reorganization of the Georgia & Florida Railway under the new name of Georgia & Florida Railroad has been declared operative and the securities to be issued under it have been underwritten. Application for approval of these securities is now pending before the Interstate Commerce Commission. John Skelton Williams, the present receiver, has been made chairman of the board and S. W. Purvis, general manager, will be president. The foreclosure sale has been set for November 1. Under the plan there will be issued $4,200,000 first mortgage 6 per cent 20-year bonds underwritten by a banking group headed by Hayden, Stone & Co., of New York and Boston, and Harrison, Smith & Co., of New York and Philadelphia. Another group is being formed to underwrite an issue of $1,500,000 non-mortgage 6 per cent income bonds. One of the first projects of the new company will be the construction of a 56-mile extension from Augusta, Ga., to Greenwood, S. C.

ILLINOIS CENTRAL.—*Valuation Hearing.*—The Interstate Commerce Commission's hearing on the tentative valuation reports for this company and subsidiaries has been postponed from October 18 to October 25. It will be held before Examiner Fowler.

MISSISSIPPI, & SKUNA VALLEY.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $200,000 of common stock of $100 par value. This is a new company which completed and placed in operation on September 1, 1926, a line approximately 22 miles long extending from a connection with the Illinois Central at Bryant, Miss., to a point to the northeast to be known as Bruce.

NEW YORK CENTRAL.—*Injunction Against Big Four Lease.*—The New York Central and the Cleveland, Cincinnati, Chicago & St. Louis have been enjoined temporarily from consummating the proposed 99-year lease in a ruling handed down in the Federal District Court at Cincinnati on October 11 by Judge Smith Hickenlooper. The action was brought by John D. Jackson on behalf of himself and other minority stockholders who charged that the New York Central, as majority stockholder of the Big Four, wants to lease the latter at a rental which is unfair to the minority stockholders. Judge Hickenlooper in his decision said:

"Our conclusion is that the court is not without jurisdiction to entertain the present action; that the bill and the supporting affidavits justify the findings of fact above enumerated, all of which were practically admitted upon argument, and that such facts justify scrutinizing the lease with a view to ascertaining whether it is entirely fair from the viewpoint of the minority or at least place the burden upon the defendant, the New York Central Railroad Company, to demonstrate that it and all its terms are fair, equitable, legal and just; and that a temporary injunction should issue to maintain the status quo until the court, as upon final hearing, shall have had opportunity to consider these questions.

"Since we consider the approval by the Interstate Commerce Commission as amounting only to consent to the lease if it can be lawfully obtained upon the terms set forth in the application, we do not consider the present decision can in any way deprive the Interstate Commerce Commission of jurisdiction of granting such approval or should deter the defendants in prosecuting their application for approval. If at the end the injunction is made permanent, the consent of the commission may avail nothing, but if the defendants are convinced of the correctness of their position presently obtaining the approval of the commission will enable the lease to be executed immediately."

PENNSYLVANIA.—*New Director.*—Dr. John Thompson Dorrance, president and general manager of the Joseph Campbell Company of Camden, N. J., has been elected a director, succeeding Bayard Henry, deceased.

SEABOARD AIR LINE.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $9,060,000 of first lien 4½ per cent equipment trust certificates and $2,276,000 of second lien 5½ per cent certificates, proposed to be purchased by a syndicate formed by Dillon, Read & Co. at 95¾ for the prior lien certificates and 97 for the junior lien certificates. The certificates are to be used in the purchase of equipment to the amount of $11,336,054.

Equipment Trusts Sold.—Dillon, Read & Co., Ladenburg, Thalmann & Co. and Freeman & Co. are offering $9,060,000 4½ per cent equipment trust certificates, series Z, to be issued under the Philadelphia plan and sold at prices to yield from 4.60 to 4.95 per cent.

SEABOARD AIR LINE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the Naples, Seaboard & Gulf, now nearing completion between Naples and the south bank of the Estero river, Florida. The company was organized in the interest of the Seaboard.

SOUTHERN.—*To issue $30,000,000 of Stock.*—President Fairfax Harrison made the following statement after the meeting of the board of directors of the company, held in Richmond on October 12:

"The time has arrived, in the judgment of the board of directors, when the company's credit, its financial strength and its sustained earning power, as well as the market price and income value of its common stock warrant the inauguration of a policy of securing a portion of its new capital through the sale of stock. According to board has called a meeting of the stockholders to be held in Richmond on November 18, 1926, to vote upon the issue of $30,000,000 par value of additional common stock. The plan is to offer this stock to the stockholders for subscription from time to time as new capital shall be required. Only $10,000,000 of it need be sold now to supplement other resources available for the 1927 improvement budget, and it is proposed to offer to the preferred and common stockholders the present privilege of subscribing to 100,000 shares of new common stock at its par value of $100 per share at the rate of one new share for each 18 shares held. This will afford to the stockholders immediately valuable subscription rights, and the authorization of the remaining $20,000,000 of new stock will lay the foundation for other such rights during the coming years."

TEXAS & PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Cisco & Northeastern, operating between Cisco and Breckenridge, Tex., 28.2 miles, by the purchase of 51 per cent of its capital stock for $210,000.

WABASH.—*Tentative Valuation.*—The Interstate Commerce Commission on October 12 served its tentative valuation report on the Wabash and affiliated properties, stating the final value for rate-making purposes of the property owned and used for common-carrier purposes as of 1919 at $106,625,000. The final value for the property owned was placed at $107,241,951 and that of the property used at $116,860,747, including $10,235,747 for leased lines. The Wabash had an outstanding capitalization as of valuation date of $202,436,149, and its book investment in road and equipment was $208,079,891, which is readjusted to $207,216,697. The cost of reproduction new of the property used, not including land, is placed at $110,944,791 and the cost of reproduction less depreciation at $81,471,687. The company used 27,611 acres of carrier lands, which are assigned a present value of $28,086,399, and it held $6,028,602 par value of securities of other companies, recorded in its accounts at $3,218,860.

Average Price of Stocks and Bonds

	Oct. 12	Last Week	Last Year
Average price of 20 representative railway stocks	98.74	100.15	86.44
Average price of 20 representative railway bonds	95.60	96.03	91.43

Railway Officers

Executive

L. B. Allen, superintendent maintenance of way of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed assistant to the vice-president of that road and the Hocking Valley, with the same headquarters, succeeding **G. D. Brooke,** promoted.

G. L. R. French, who has been appointed vice-president and general manager of the Rutland, with headquarters at Rutland, Vt., was born on May 18, 1863, at Salisbury, Mass. He was graduated from the Massachusetts Institute of Technology in 1884, and entered railway service in September of the same year with the Chicago, Burlington & Quincy, at Lincoln, Neb. He held various positions in the engineering and operating departments of this railroad until 1890, when he was appointed roadmaster of the southern and eastern divisions of the Boston & Maine. He subsequently served as assistant superintendent of the Connecticut river division and superintendent of the Boston terminal division of the same road. On May 1, 1912, he was appointed general superintendent of the Rutland, with headquarters at Rutland, Vt. In January, 1923, he was appointed acting general manager of the same road, and in November, 1924, general manager, which position he held until the time of his recent appointment.

Col. W. S. Battle, Jr., who has been appointed vice-president in charge of valuation, real estate and public relations of the Norfolk & Western, with headquarters at Roanoke, Va., was born at Rocky Mount, N. C., on February 24, 1870. He was educated in the public schools at Rocky Mount, and at Horner's School, Oxford, N. C., and spent two years at the University of North Carolina. He first entered railway service in December, 1888, in the office of the auditor of the Atlantic Coast Line, and in 1899, became secretary to the superintendent of transportation of the same railroad. In December, 1890, he became clerk to the trainmaster of the Pulaski division of the Norfolk & Western, with headquarters at East Radford, Va. From 1897, he held the positions of chief clerk, agent and yardmaster with the same road, and assistant trainmaster, trainmaster and superintendent of the Virginia & Southwestern (now a part of the Southern), with headquarters at Bristol, Va. In March, 1914, he was appointed general claim agent of the Norfolk & Western, holding this position until the advent of government control. Upon the return of the railroad from government control to private management in 1919, he resumed his duties as general claim agent of the same road. When valuation work was first undertaken by the Norfolk & Western, he served on the valuation committee of the railroad for about a year.

Col. W. S. Battle, Jr.

Financial, Legal and Accounting

Clayton Snyder, who has been associated with the Pittsburgh Steel Company, Pittsburgh, Pa., has been appointed assistant secretary and treasurer on the Chicago, Rock Island & Pacific, with headquarters at New York, succeeding **F. A. Smith,** deceased.

W. G. Hunt, assistant auditor of the Atchison, Topeka & Santa Fe Coast Lines, with headquarters at Los Angeles, Calif., has been appointed acting auditor, with the same headquarters, succeeding **L. B. Jones,** on leave of absence.

Reuben J. Hagman, who has been promoted to assistant general counsel on the Great Northern, with headquarters at St. Paul, Minn., was born on February 2, 1888, at Charles City, Iowa. He spent two years at Beloit College, Beloit, Wis., and graduated from the law school of the University of Washington, Seattle, Wash., in 1911, entering railway service in November, 1912, as a law clerk on the Great Northern at Seattle. In 1915 he was promoted to assistant attorney, with headquarters at Seattle, and four years later he was transferred to Spokane, Wash., where he remained until 1920, when he was promoted to attorney, with headquarters at St. Paul. The following year he was promoted to assistant general solicitor at St. Paul, a position he held until his recent promotion to assistant general counsel, with the same headquarters. Mr. Hagman's entire law and railway service has been with the Great Northern.

R. J. Hagman

Charles S. Albert, who has been promoted to general attorney on the Great Northern, with headquarters at Seattle, Wash., was born on July 10, 1872, at Williamsport, Pa. He received his legal education at Columbia University, New York, and at the University of Minnesota, Minneapolis, Minn., graduating from the latter university in 1894. Mr. Albert entered railway service in the legal department of the Great Northern in May, 1898, engaging in railroad and general practice in Minneapolis until September, 1911, when he was appointed attorney for the Great Northern, with jurisdiction over eastern Washington and Idaho, with headquarters at Spokane, Wash. From 1917 to 1919 he served as a lieutenant colonel in the American Expeditionary Forces in France, and at the end of that time he returned to the Great Northern as attorney at Spokane. He remained there until October 1, when he was promoted to general attorney, with jurisdiction over cases in Washington, Oregon and Idaho.

Charles S. Albert

Operating

J. R. Austin, chief dispatcher on the Union Pacific, has been promoted to trainmaster on the Nebraska division, with headquarters at Grand Island, Neb.

J. M. White has been appointed freight claim agent, with jurisdiction over loss and damage freight claims, baggage claims and reconsignment and diversion of carload freight, of the Norfolk Southern, with headquarters at Norfolk, Va.

L. E. Covin has been appointed trainmaster of the Tampa district of the Atlantic Coast line, with headquarters at Lakeland, Fla. He will have jurisdiction over the territory from Sanford to Lakeland, including the Haines City and Narcoossee branches, succeeding **W. A. Houser,** resigned.

Xerxes H. Cornell, superintendent of the Chicago terminal of the Chicago & Alton, with headquarters at Chicago, has been appointed manager of the Alton Transportation Company. His work in charge of the Chicago terminal will be taken over by **R. T. Burdette,** terminal trainmaster at Chicago, who has been promoted to assistant superintendent. **James J. Butler,** assistant superintendent, with headquarters at Springfield, Ill., has been transferred to Bloomington.

John B. Parrish, who has been appointed assistant vice-president of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Richmond, Va., was born on September 8, 1877, in New Kent county, Va., and received his education at the College of William and Mary, from which he was graduated in 1898. He entered railroad service on July 1, 1901, as a clerk in the agent's office of the Chesapeake & Ohio, at Newport News, Va. He then served consecutively to January 1, 1919, as clerk in the superintendent's office, clerk in the general manager's office, on the car allotment commission, assistant to the general superintendent, assistant superintendent of transportation, superintendent of transportation, and general superintendent. In January, 1919, he was appointed general manager of the Chesapeake & Ohio, which position he held until the time of his recent appointment as assistant vice-president. His entire railroad experience since leaving college has been with the Chesapeake & Ohio.

J. B. Parrish

L. G. Morphy, who has been appointed general superintendent of the Rutland, with headquarters at Rutland, Vt., was born on December 4, 1876, at Orizaba, Vera Cruz, Mexico. He attended Spring Hill College, at Mobile, Ala., from 1894 to 1897, and the Rensselaer Polytechnic Institute at Troy, N. Y., from 1897 to 1900. He first entered railway service in 1900, with the New York Central & Hudson River. In 1901, he was appointed assistant supervisor of track of the same road, and served in this capacity until 1902, when he was promoted to acting supervisor of track and later to assistant engineer maintenance of way. In 1903, he was promoted to assistant engineer of construction and design and in 1904, to assistant engineer of grade crossing eliminations. In 1905, he was appointed resident engineer for the Western district, and from 1905 to 1907, acted as principal to the assistant engineer. From 1907 to 1908, he acted as assistant engineer maintenance of way and construction of the Boston & Albany, and from 1908 to 1910, as assistant to the chief engineer of the same road. In 1910, he became designing engineer of the same road, which position he held until 1919, when he became principal assistant engineer. In 1920, he became special representative and manager in South America for the Foundation Company of New York. In 1921, he became chief engineer of the Rutland, which position he still holds in addition to his new position as general superintendent.

Traffic

D. A. Wanklyn, traveling industrial agent on the Canadian Pacific, with headquarters at Montreal, Que., has been promoted to industrial commissioner of the Eastern lines, with the same headquarters, succeeding **G. W. Curtis,** who has resigned to become general manager of the Montreal Rail & Water Terminals, Ltd.

G. S. Donaldson, general agent on the Chicago & North Western at Toronto, Ont., has been transferred to Tulsa, Okla., and the Toronto agency has been abolished.

John Strachan, assistant agricultural agent on the Canadian National, with headquarters at Winnipeg, Man., has been promoted to agricultural agent, with the same headquarters, succeeding **W. E. Watson,** who has been appointed district superintendent in the colonization department, with headquarters at Saskatoon, Sask.

M. F. Tompkins, general freight agent of the Atlantic region of the Canadian National, with headquarters at Moncton, N. B., has been appointed traffic manager of the Atlantic region, with the same headquarters. Mr. Tompkins was born on December 6, 1878, at Margaree, N. S., and was educated in the public schools of Truro. He began railway work on November 28, 1896, with the Intercolonial railway, now a part of the Canadian National, as a telegraph operator, and served in various places until February, 1900, when he became freight clerk at Truro, which position he held until May of the same year. He then served in a similar position at Sydney, until September, 1902, when he was appointed accountant in the superintendent's office at New Glasgow, and from July, 1903, was for one year, telegraph operator at the same place. He subsequently served as relieving agent at various places until January, 1911, when he became chief clerk in the division freight agent's office at Halifax. On November 30, 1914, he was appointed division freight agent at the same place, and in June, 1917, was appointed assistant general freight agent at Moncton, N. B. In September, 1919, he was appointed general freight agent at Moncton, N. B., which position he held until the time of his recent appointment.

M. F. Tompkins

Engineering, Maintenance of Way and Signaling

W. A. Perpaw, roadmaster on the West Hannibal division of the Chicago, Burlington & Quincy, with headquarters at Cameron, Mo., has been promoted to engineer of maintenance of way on the Missouri district, with headquarters at St. Louis, Mo., succeeding **A. Craine,** resigned.

C. J. Geyer, assistant superintendent maintenance of way of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed engineer maintenance of way, with the same headquarters, succeeding **L. B. Allen,** promoted. The position of superintendent maintenance of way has been abolished.

Mechanical

Guy B. Davis, shop inspector on the Union Pacific, has been promoted to general car foreman, with headquarters at Grand Island, Neb.

F. G. Toates, assistant road foreman of engines of the Southern Pacific, with headquarters at Los Angeles, Cal., has been appointed road foreman of engines of the San Joaquin division, with headquarters at Bakersfield, Cal., succeeding **S. H. Bray,** who has been promoted.

C. B. Ranson, assistant road foreman of engines of the Seaboard Air Line, with headquarters at Norlina, N. C., has been appointed road foreman of engines, East Carolina division, with headquarters at Andrews, S. C., succeeding **C. A.**

Goodwin, deceased. **J. L. Rawlings** has been appointed assistant road foreman of engines, Virginia division, with headquarters at Norlina, N. C., succeeding Mr. Ranson.

J. H. Painter, master mechanic of the Atlantic Coast Line, with headquarters at Rocky Mount, N. C., has been appointed master mechanic of the Wilmington district, with headquarters at Wilmington, N. C., succeeding **P. J. Meade,** deceased. **R. D. Bulluck,** division road foreman of engines, with headquarters at South Rocky Mount, N. C., has been appointed master mechanic of the Richmond, Norfolk and Fayetteville districts, with headquarters at Rocky Mount, N. C., succeeding Mr. Painter. **G. C. Jones,** division road foreman of engines, with headquarters at Waycross, Ga., has been appointed general road foreman of engines with headquarters at Jacksonville, Fla.

Purchases and Stores

T. J. Hegeman, on the staff of the vice-president on the Chicago, Burlington & Quincy, has been appointed superintendent of reclamation and scrap, with headquarters at Eola, Ill.

Edwin J. Myers, assistant general storekeeper of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to general storekeeper, with the same headquarters, succeeding **C. C. Kyle,** promoted to purchasing agent. Mr. Myers began railway service on the Northern Pacific in November, 1889, as a stores laborer under the master mechanic at Fargo, N. D., and in July, 1890, he was appointed as a clerk in the office of the division storekeeper at Fargo. In May, 1900, he was promoted to division storekeeper at Mandan, N. D., where he remained until April, 1902, when he was transferred to Glendive, Mont. He then served successively as division storekeeper at Jamestown, N. D., at Dilworth, Minn., and at South Tacoma, Wash., until 1919, when he was promoted to assistant general storekeeper, with headquarters at St. Paul, a position he held until his promotion to general storekeeper.

E. J. Myers

H. M. Smith, traveling storekeeper on the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to assistant general storekeeper, with the same headquarters, succeeding **E. J. Myers,** promoted. Mr. Smith will be replaced as traveling storekeeper by **C. A. Nichols,** district storekeeper, with headquarters at St. Paul, who will in turn be succeeded by **A. C. Johnson,** division storekeeper at Dilworth, Minn. **W. O. Weber** has been appointed division storekeeper at Dilworth, Minn.

Fred A. Bushnell has resigned as purchasing agent of the Great Northern, with headquarters at St. Paul, Minn., effective October 14. He was born on December 3, 1871, at Madison, Wis., and entered railway service on March 1, 1890, as an office boy in the office of the superintendent of motive power of the Great Northern at St. Paul, Minn. From January, 1891, to November, 1895, he served as a clerk in the general storekeeper's office and he was then appointed division storekeeper at Kalispell, Mont. The following year he became a clerk in the general storekeeper's office at St. Paul and in May, 1899, he was made chief clerk in the general stores department where he remained until November, 1905, when he was promoted to general storekeeper. In November, 1910, he was appointed general purchasing agent of the Spokane & Inland Empire, the Spokane, Portland & Seattle, the Oregon Electric, the Oregon Trunk and the United Railways, subsidiaries of the Great Northern. In December, 1912, he returned to the Great Northern as assistant purchasing agent and in June, 1913, he was promoted to purchasing agent, which position he held until his resignation.

Special

Miss Laura E. Armitage has been appointed co-editor of the Chesapeake & Ohio and Hocking Valley employees magazine, succeeding **Miss Mary Lina Bledsoe,** resigned. **Miss Myrtle I. Cooper** has been promoted to assistant editor of the same magazine.

Obituary

Ernest L. Akans, master mechanic on the Southern at Atlanta, Ga., died at his home on October 5.

H. M. Mackan, assistant foreign freight agent of the Norfolk & Western, died on September 16, 1926, at the Protestant Hospital in Norfolk, Va.

W. F. Sterley, assistant traffic manager of the Ft. Worth & Denver City and the Wichita Valley, died on September 21 at his home in Ft. Worth, Tex.

Clifford D. Perkins, division engineer on the New York, New Haven & Hartford, with headquarters at Danbury, Conn., died on September 24 at Stamford, Conn.

James Asnault, who retired in December, 1924, from the position of superintendent of the mountain division of the Maine Central, died on August 28, 1926, at the Lancaster hospital in Lancaster, N. H.

William A. Holley, assistant general freight traffic agent in charge of coal traffic on the Chicago, Burlington & Quincy, from 1904 to 1919, and recently vice-president of the Phoenix Coal & Coke Company, died at his home in Chicago on October 5.

Anthony A. Cummins, treasurer of the Pullman Company, died on October 9 at his home in Chicago. He was born on October 16, 1859, at St. Louis, Mo., and entered railway service in January, 1901, with the Pullman Company as an accountant. In 1904 he was appointed acting auditor of disbursements and the next year he was promoted to auditor of disbursements. He was elected treasurer of the Pullman Company in 1917, a position he held until the time of his death.

J. D. McCubbin, who was real estate agent of the Baltimore & Ohio from 1896 to 1920, died on October 6, 1926, at his home in Baltimore, O., following an illness of six months. Mr. McCubbin was born in Baltimore on February 7, 1859, and entered the service of the Baltimore & Ohio, on August 22, 1877, as a messenger and clerk in the general ticket office at Baltimore, O. In November, 1879, he became a stenographer in the transportation department, and in September, 1885, he was promoted to secretary to the second vice-president. In July, 1890, he was advanced to the position of right-of-way agent at Philadelphia, and in July, 1890, became real estate agent for the system, which position he held until March 1, 1920, when he was assigned as special representative of the real estate department.

Arthur Holland, chairman of the executive committee and president of the Bangor & Aroostook from 1912 to 1916, died on October 1, at Concord, Mass. Mr. Holland was born on September 22, 1850, at Boston, Mass., and was graduated from Harvard University in 1872. From 1872 to 1888 he was employed by Naylor & Company, dealers in railway supplies. From 1888 to 1894 he was a member of the firm of Naylor & Company, and from 1894 to 1897 a member of the firm of Holland & Company. From 1897 to 1901 he was agent for the Illinois Steel Company at London, England. In 1902 he became president of United Railroads of San Francisco, Calif., which position he held until 1905. From 1908 to 1911 he was a member of the executive committee of the York Railway, at York, Pa., and in 1912 became president of the Bangor & Aroostook.